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Review
Welcome to our latest

Postcard
Following in the footsteps of the North Eastern Railway Company

Lochinvar
Peter Smith's Blyth

Rolleramerk rewrite
The conclusion to the rewrite of Rolleramerk

Crunchtubbing in 009 (2)
Completing the 009 layout with the remaining track, wiring and scenery

1908 pre-cafe era
Part 2 of Peter Denny's look at the railway in Edwardian times

Cwm Tribeb
Further improvements to the Welsh narrow gauge railway

Edinburgh
Part 2 of Peter Smith's look at the Scottish capital

Scalpay (...)
Part 3 of Peter Smith's look at the railway on the Scottish island of Scalpay

EP&N gradient 3
Part 3 of Peter Smith's look at the Edwardian era railway operating system

The evening cafe train
Part 2 of Peter Denny's look at the railway in Edwardian times

1948 low cafe wagon
Part 3 of Peter Denny's look at the railway in Edwardian times

1908 cafe cars in town
Part 4 of Peter Denny's look at the railway in Edwardian times

Thomas's refuse
Part 3 of Peter Denny's look at the railway in Edwardian times

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News & Products

Technology trend continues

In this issue

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More than 20,000 hobbyists attend National Train Show in Philadelphia

Will scale Walthers Mainline Turboliner: A preproduction sample of the famous gas turbine-powered articulated passenger train was shown by Rapido Trains. The Turboliner includes two Power Dome Cars and one intermediate car. Both Power Dome Cars have five axle diesel-electric with flywheel sound decoders and speakers that operate on both DC and Digital Command Control, and full-width operating diaphragms.

Walthers lowers locomotive prices

Milw. St. Walthers, Inc., of Milwaukee, Wisc., announced that it has lowered the prices on most of its Life-Like Premium Steam, Proto 1000, and Proto 2000 series locomotives in N and HO scales. "We want to get models in your hands as soon as possible," said John Dantuono, Walthers vice president of marketing and sales. The new lower prices will go into effect immediately. The revised prices can be seen on the Walthers Web site at www.walthers.com.

Three elected to council

Three members of the model railroad industry were elected to serve on the Hobbies Council of Hobby Industry Association. Hobby Lobby's Clarence Fredenburg, Plasma Sales and Promotions Director, and Kenny Monahan, Director, Hobby and Craft Division, Hobby Lobby Stores, Inc., were all elected to three-year terms.

Other members of the Hobbies Council include Chad Dyer, Hobbico; Rick Dickey, Craft Supply Hall Pearce; Kurt Gramberg, Rod Stewart Stamping; Rick Hoen, Monarch Coupling; and Tara Thompson, Dover Publications. Fredenburg, who was elected to a second term, was also elected as secretary/treasurer. Rick Dickey was also appointed to the position of vice president of the association's marketing committee.

MR staff change

There has been a staff change at Model Railroader magazine. Barb Rychlewski, our editorial assistant, moved after 15 years with the magazine. A valued member of the MR team, Barb took care of many tasks, from approving reader questions to updating the online Evening Scenes section.

Barb will be replaced by Tara Nesen, our former editorial intern. Tara graduated from Marquette University in December 2005 with a journalism degree. While in college, Tara worked for the Marquette Tribune and also interned with Milwaukee Magazine. In addition to her day-to-day duties as an editorial assistant, Tara is also working on the MR Web site.

Tara Nesen

2006 hall of fame inductees

Laura Fish, Bernd Laris, and the late Fred Mayo were inducted into the Model Railroad Hobbyist Council of the Hobby Industry Association Hall of Fame during the recent convention in Philadelphia.

Laura got in the industry working at Fish in Hobby Stores in New York City in the late 1960s. It was her single most important love before Craft Traks.

Bernd Laris is one hardworking man when it comes to his role in the development of digital command control (DCC) and sound systems. He chairs the NMRA DCC Lead to the National Model Railroad Association.

The late Fred Mayo built a solid foundation during the 1970s and '80s and was also a part of many successful Atlanta conventions in the 1970s.

Contest update

A downloadable track template for our Layout Design Contest is now available on our Web site. Look under Site Features and click on Layout Design Contest.

N scale Electric Mexico Express EF-beast comparison. The first sound-equipped N-scale locomotive was shown by Precision Craft Models. The G1Ns are decorated for Great Northern, Baltimore & Ohio Chicago, Burlington & Quincy, New York Central (NYC), Pennsylvania RR (PRR), Southern Pacific (SP), Union Pacific (UP), and undecorated. The G1Ns are available delivered by NYC, PRR, SP, and UP. The ready-to-run model has sprung die-

phragms, separately applied details, and constant intensity, directional headlights. All of the models are offered with (MSRP $249.98) or without (MSRP $219.98) a DCC/SB Electronics Sidetrack (Mini-Digital Command Control) and sound system.

S scale Baltimore & Ohio class EM-1 & E-1 electric locomotives. B-Helper Service displayed its new ready-to-run locomotive. The E-1 is decorated for B&O, Alphabet, Pyramid & Santa Fe, Chicago & North Western, Erie Mainline Central, New York Central, Southern Ry., Western Maryland, and painted black but unlettered. The model has a die-cast cast motor, smoke unit, and die-cast metal boiler and cab. Direct-current models are priced at $249.95, and models with Digital Command Control and sound at $329.95. Lee-Mate control system (MTS) $299.95.

S scale Electric Mexico Express GE70B and GE70C diesel locomotives. Modern era and road diesels are now available from American 2 Line. The GE70Bs are offered decorated for Norfolk Southern and Union Pacific, and the GE70 is painted for Canadian National. The injection-molded plastic models, which sell for $219, have brass Pittsburgh motors and light-emitting diode headlights.

News products at the 2006 National Train Show

HO scale locomotives

General Electric U25B diesel locomotive. Overland Transporting Line, Milwaukee Road, Pennsylvania, Rio Grande, Union Pacific, Wisconsin Central, Illinois Central, and Santa Fe. Features: 4-pole can motor, 4-pt. flywheel, metal gears, operating headlight, and factory-applied details. $159.95 as DA/DR, $179.95 with Digital Command Control and sound with after the rebound. Bachmann Industries Incorporated, Equipment Line Division, Manufacturing.

Lima Hamilton 260-, 1000-, and 1200-hp. diesel switchers. Each model shell with detail parts and factory-installed mechanism. $44.95. Kit Models

HO scale freight cars

Pennsylvania 50-class F30 Railcars. Five-color box with detail parts and decals for six models or variations. Item #20-3. Preiser & Associates

Northern Pacific 50-foot single-sheathed Y-6 **stock automobile boxcar.** Boxes kit with detail parts, Schlegel mechanical roofs, underframe, and body. Kits. Speed wheel Models

HO scale passenger cars

Pullman 14-section heavyweight sleeper. Milwaukee Road, Pennsylvania, $36 (sold out). Used cars lined with schemes. Pullman-Standard and New York Central versions, each featuring Pullman-Standard sealed, with underbody details, metal wheelsets, and Kadee no. 5 couplers. $44.95 each. Broadway Limited.

HO scale commuter equipment

Bombardier Bi-Level Pennsylvania Transit Authority "Diamond Jay" transit cars. Five-piece sets: lead shell, underbody detail, interior seats, Bowser drive and trucks, Kadee-compatible coupler pockets, and magnetic knuckle couplers. Shell kits also available. Price to be announced. Imperial Models Productions.

Chicago Transit Authority 4000-5000 series "Baby" elevated cars. Resin models. Come motor with 16-inch-by-eight-inch drive to each axle. Three-car, 4-lapsed-built, painted factory-red-orange with and painted green-and-cream CTA. $179. Empire, Inc.

HO scale structures

Jonesboro City, Wis., depot. Laser-cut wood kit. Based on two Core prototypes. Price to be announced. LK Laser.

Erie RR Electronics viaduct. Mounted plaster concrete. Measures 21½" x 12¼" x 4¾". Uses HO fluorescent bulb (not 7½" to bridge), set $5. Model Rectifier Corporation.

Cheyenne Machine Shop. Laser-cut wood kit with white metal details and metal trees. $27.95. Rio Grande Models.

HO scale details and accessories

Coal loads. For Kadee American no. 4 hoppers. Black coal. Bags with 2-way fixing and fastening wire. Weighs 0.035 lb. Weights for loads available separately. Three-pack $2.95. Kadee Quality Products Co.

Schnauzer. Cast resin; tail and pipe-holder wood details, and full coping. Measures 3" x 1½". $3.95. Model Train Studios.

Z scale train sets

Illinois Central Diamond Special. 4-4-0 steam locomotive and five-axle steam passenger driving

4-4-0 scale Northwestern Locomotive Works. A 4-4-0 steam locomotive in preproduction sample at Manhattan's new steam locomotive was on display in the firm's hometown. The ready-to-run model will be decorated for Atlanta Central, Maryland & Pennsylvania, Havenport Air Lines, Southern Fly, and painted black but unlettered. The model, priced at $540, will have an eight-pin plug for Digital Command Control, die-cast metal boiler, chassis, and frame, and metal Walschaerts valve gear.

HO scale United States Railroad Administration heavy 2-10-2 steam locomotive. Kalmbach had several new items on display, including a preproduction sample of its new ready-to-run steam locomotive. The 2-10-2 will be delivered for Bessemer & Lake Erie and has other railroads plus painted black but unlettered. The model will be offered in DC for $325 and with Digital Command Control and a QSA Quantum sound system for $424. Both versions will have a five-pole skew-wound motor, KW-25 overhead catenary, and optional traction tires.

HO scale town car wood diorama kit. Pagget Road is the newest offering from Bar Mills Scale Model Works. The diorama kit includes five laser-cut wood structures, including Plattsboro Furniture Co., Morgan's Corner Pharmacy, Skinner's Salvage, Harry's Hideaway Tavern, and debris from a ruined building. Only 500 diorama kits will be produced, and they'll sell for $250 each.

O scale Electro-Motive Division SD70ACe diesel locomotive. New from Overland Models is this modern union Pacific diesel locomotive decorated in the Missouri Pacific heritage scheme. The ready-to-run scale model is factory painted and lettered and features operating headlights and strobe lights. The manufacturer's suggested retail price for the SD70ACe is $3,695. The firm will also be offering models of the SD70MAC decorated in the Denver & Rio Grande Western heritage scheme.

HO scale Alco PA-1/2 diesel locomotive. A painted sample of the newest Trainman line diesel locomotive was on display at the Nitty booth. The PA-1/2 will be offered decorated for New York Central, Chicago & North Western, Southern Pacific, and undecorated. The model will have an eight-pin plug for a Digital Command Control decoder, die-cast metal frame, scribed plastic handrails, locating stirrups for grab irons, and railroad-specific details. The ready-to-run model will list priced at $79.95 ($99.95 for the undecorated model).

Allied Division & Rio Grande Western K-27 2-8-2 Mikado. Sherwood Models, a division of SoundTrace, showed samples of its narrow gauge steam locomotive. The die-cast metal model has a can motor with balanced flywheel, optional SoundTrace Tsunami sound decoder, plastic, metal, and resin details and individual grab irons and handrails. The model painted in various Denver & Rio Grande Western and Rio Grande Southern schemes, operates on DC and Digital Command Control. The K-27 is priced between $350 and $360.

and deck-arch plate girder, stone arches, and city overlays. 27x21. Available from Walthers, Inc.

O scale structures

Masonry structures. 1930s industrial building, brick plant, coal dump shed, coaler's gas station, fire station, freight depot, intermodal yard office, large industrial building, library, modern dairy, mini skyline, police station, post office, and pump house and water tower. Structures have lasers or resin and include undercoated white kit and instructions. $14.95 to $49.95 each. Also available in N scale. Sievers.

Multiple scale passenger trains

General Motors Aerotrain. In Chrome, Engine & Dome (E) General Motors demonstrator, New York Central, Pennsylvania RR, Rock Island, Union Pacific and painted white two-unit powered diesel sets with dual PA chassis, dual transformers and sound, and single (no PA) and twin (right) unpowered B units (PB-1) with dummy board for optional simultaneous sound and light-emitting diode interior lighting. Prototype set includes two engines and observation cars. HO and N scales. $429.95. Bowser Manufacturing, Inc.

[illegible] scale General Electric U30B diesel locomotive (Atlas Model Railroad Co. sponsored many modelers when it displayed preproduction shell samples for its new four-axle GE diesel locomotive. The U30B will be offered with two- and four-wheel cabs and prototype-specific door latches and louvers. Price, road names, and additional details will be announced at a later date.

Block Command Station. This new multi-protocol command station is being offered by Electronic Solutions (dba The Block Command Station, which sells for $899, supports Digital Command Control (DCC), Motorola/Motorola, and Selectrix operating systems. The device can control as many as 20 functions per engine and has RS232 (serial communication) built in.

Multiple-scale freight car trucks. Resin-steam brake equipment trucks have been released by Grayson Enterprises. Set 1040 (40 ton, $10.99) includes two trucks, two gears, and one flywheel. Set 1101 (50 ton, $11.99) features two trucks, two gearboxes, and one flywheel. Set 1060 (100 ton, $16.99) has one truck, one flywheel, and two gearboxes.

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Electronics Hobbyists

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Mini Sonic Digital Command Control (DCC) mobile decoder

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The Tall Steel Viaduct

News & Products

A recent PRR 50-foot, outside-braced boxcar, Micro-Trains Line Co. introduced this ready-to-run model. The injection-molded plastic boxcar, decorated for Norfolk Southern (pre-1982 company), has a diagonally applied brake wheel, 10-foot Youngstown sliding doors, and Magne-Matic couplers. The price for the PRR 50-foot boxcar will be announced at a later date.

IMI recently introduced Tropicana & Santa Fe citrus generator car no. 1305. New from The Coach Yard is this ready-to-run brass model based on a Santa Fe prototype. Steam generator car no. 1351 in a factory-painted brass model decorated in American Revolution Bicentennial colors. The car is priced at $350.

Worthington recently added three new High of the South Models hard samples from its line of palm tree kits designed by N through G scales. Shown from left to right are a Canary Island date palm, cabbal palmetto, coconut palm, and Washingtonia fan palm. The kits, priced between $16 and $45, include resin trunks, vinyl fronds, and floral wire.

Weeds. [illegible]

Premium trees. [illegible]

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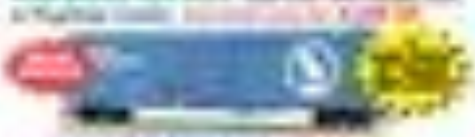

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Smarter detectors, less talking

Defect detectors have gone 'WILD' to spot troublesome wheelsets

A person who has spent time in a locomotive has heard the chorus: chorus chorus of a car with flat spots on its wheels. If the car is loaded or further back, the noise, probably, even more aware of the problem.

But you'll want to hearing aren't free of the noise. Thanks to smart new technology at work.

With heavier freight cars, mishaps where minimal mistreatment vibrations or track by car and the rail — are picking the noise of birds. Yet preventing that the rail takes can aggravate running defects on cause new ones. Eliminate a bad wheel can cause a derailment.

So, railroad shops operate sensors railroads are upgrading their defect detectors to catch the ones that are becoming a potential hazard. More on that in a moment, but first, let's check out wayside defect detectors systems in use from engineer's testing forward.

Traditional detectors check hot box bearings or wheels (and for dragging equipment). They consist of load cells or sets of mercurial sample switches across the right of way, which consist the wheel and bracket (since be you dragging equipment, such as a boom rail-diesel chain.

Now contractors are high-scale detectors that search locomotive with low or medium vibrations, such as tunnels or bridges. There are light forums, which it renders, wakes that the more common equipment recording the ultimate maintenance for the first wheel.

The detectors is activated by the approach of a train, at which point it may broadcast an identification message, such as "[123] railroad detector indicator [123]." If the detector senses a problem, it broadcasts a warning tone, followed by a description of the problem, giving its location by the number of axles from the front of the train. The alert tone may also be followed by a general warning message and an order to stop the train prior to the destination.

Detection of the damage that had already can do, railroads such as BNSF are deploying more sophisticated detectors going by the acronym WILD to collect impact load detectors — looking for flat spots that have grown into a real problem.

Interestingly, WILD units are integrated with available scanners for the radio frequency identification tags on railroad car rolling stock on short-haul service. With this integration, the detector can easily capture the defect that also the supporting records of the car.

What do WILD units look like? It does not looked with a traditional de-

A BNSF wheel impact load detector near La Crosse, Wis., finds flat spots that can cause derailments on the main line.

tector and don't have identification tag scanners, you just see only metal boxes. The detector consists of a small metal plugs attached to each rail. The sensors that position the readings may be in the same secure equipment cabinet used to check for other defects.

If the detector once identification tags, you'll see a small directional antenna on a short post on one or both sides of the track. Tags on cars and locomotives don't require a power source. The signal from the scanner provides the energy for the tag to transmit its identification data.

Railroads in wayside have long used talking detectors to catch those in approaching trains. Those standing with a scanner on a passenger train can hang on to the train's location.

But as railroads get faster and start to hear detectors less and less. Most have stopped to use "talk to detect well" processes. Simplifying only when a problem is detected. That way the detector or just likely to operate only when radio communications to the wire. As the old saying goes: "Silence is golden."

How a Class I goes looking for trouble

DCC Encyclopedia

CMR

All Turnouts & Roundhouse Kits

Annual Christmas Train Show at The Factory in Franklin, Tennessee

December 16 & 17, 2006

Five passenger-train tips

Trains are many excellent [illegible] per car models [illegible] on the market, but what can you do with them? Here are five ideas to get you started.

1. Service the locomotives. Most HO freight engines passenger locomotives can all trains short hauls at the end of the run and have to the expenditure on be so tested, cleaned, and washed. So inspection will also take place and will require will be made.

Locomotive servicing isn't confined to end points. In the days of steady passenger platforms at intermediate large stopping had were occasions to run off the coaches. Today, both Amtrak and VIA Rail Canada contracts with local part-time drivers who dispatch under way to fuel locomotives right at the platforms.

2. Service the cars. After the last passenger has departed at the end of a run, a switch engine arrives to pull the cars to the coach yard. Inside, trained train maintenance personnel do inspection, cleaning, and restocking. There's a lot of specialized equipment in a big-city coach yard.

3. Don't forget the mail. Trains operating between the 1920s and 1960s often included a Railway Post Office (RPO) or mail storage car for around in their consists. Passenger locomotives were to be serviced before, after and sometimes even during runs. At Pennsylvania RR's Sunnyside Yard in New York City, inbound (left) "ferrets" arrive at the west (east) (at right). Even more in the engine inn pit and coach cars, including [illegible] were available for service are lined up on the ready track at extreme left. (photo C. J. Riley photo)

Working mail on passenger trains was big business for the railroads; many large [illegible] trains carried mail in the 1930s, and as cities near the postal contract supplanted air shipments ceased losing [illegible] got more. Where the contracts were small, so did these trains.

As City Businesses worked in the "short in the cars" service (only [illegible] Railroads), mail was handled in one broad categories of cars. Railway Post Office cars are a combination mail (RPO compartments on smaller trains) and baggage express cars.

Postal workers worked RPOs, and mail was collected, sorted, and distributed on the trains routes to its destination. A signature feature of these cars was a door-mounted hook that a clerk racing one would to snag mail bags "on the fly." Even [illegible] mail cranes – a mini-derrick on a signal arms.

Baggage express cars were used for "storage mail." Mail bags were stacked inside, but no sorting was done on these cars.

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Information Desk

Mark your own usually misplaced trees the most immediately upon arrival at the destination cars and included on Set Free Office's designated tracks. These cars were also the last to be added before a more dispersed, if consequently pained cars could load a chance to visit the work and more other noticeable stories than the other cars in the train – a useful thing to remember when weathering most passenger cars.

4. Use a paint brush. Not all trains are freighters. Before most remain their with a earlier collection of them and another element could mean an insignificant one also can't maintain enough of trains.

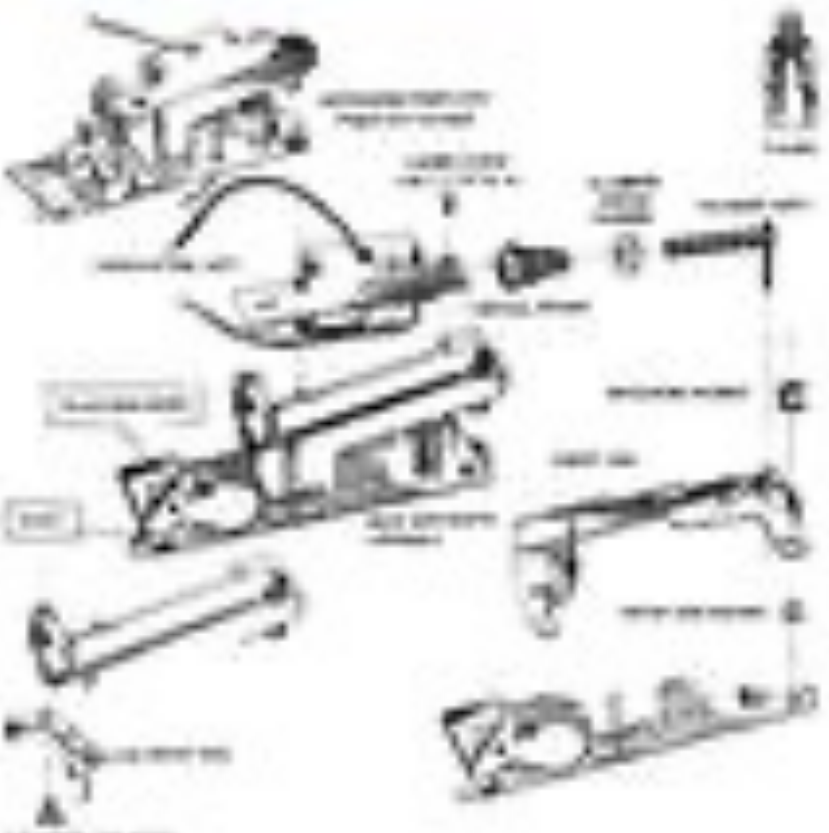
These basic trains may be internally clean, and a few can work out to somewhere where horse cars is right for. Who are passenger cars? (since December 1995, January 1981, October 1983 and May 1984, and March 1984) should provide you with plenty of inspiration.

Some railroads run commercial trains, other railroads run freight, long-distance trains that were already 60% storage track, and express cars with a coach or two added on at the rear. At the other end of the spectrum, all-coach specials commonly operated in big football or baseball games. The variety of trains is amazing and well worth modeling.

5. Vary your rolling stock. Steam-engine cars didn't disappear when the first stainless steel streamliners appeared in 1936. The lingering effects of the Great Depression and government restrictions on new rolling stock orders during World War II kept many of the heavy weights rolling through the 1950s.

If you want more information, write a book or 1000 interesting railroad books. Approximately fifty (about) Railroaders books in the range. Approximate to Hardcover Models, by A. Bowden, 1980s.

Send your questions about prototype railroading or interesting train layouts to Model Railroader magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail prototype@kalmbach.com. We might not can't answer all the questions we receive.



Aging Lionel milk car

Bent or dry parts might retard operating mechanism

I have a Lionel no. 3472 milk car that I purchased in the 1970s. When I press the unload button, the figure's arm kicks fast enough to hit the rear of the box, which sets the milk cans into the bay. When I press the same button again, the figure comes forward to throw the can on the platform. The front end of the box should allow the load can to drop down, but it is not working on my car and I can't see what might stop it. The bar over the passenger is not the type that drags. Any advice? – Robert Stellmer, Troy, Ohio

Robert, there's no magic, just good old Lionel common sense to find out what's going on. Remove the car from the box and check for anything in the path of the unloading arm that might be preventing it from moving. Check the car for any bent or dry parts that might retard operating mechanism.

Examining your milk car's frame and operating parts for any broken or worn parts is the next step. Lubricate all moving parts with a light machine oil. Don't overlubricate, as it should be a case of quantity, not quantity. Remove any excess lubrication with a clean, dry cloth.

All the parts should be clean. Dirt, smog, soot and gasoline deposits also build up on the parts and cause them to bind and stick. Use a cotton swab dipped in alcohol to clean the parts. Remove any corrosion with a fine abrasive cloth.

Now, with the car completely assembled, test the operation of the unloading arm and the operating plunger. Then check the car for proper operation.

Now, with the car completely assembled, test the operation of the unloading arm and the operating plunger. Then check the car for proper operation.

shelves and gloves, but how's space on a financial paragon. It's to apply the directories.

All the problem possess are something the cases of opening, or lesser one, explaining a shift a sort over. Remember, 8/10-20 above and at a few seconds, as it to are a pile above are supplies before years.

I forget this have the body. It's the that I can do without crossing one on.

Swapping track versions

More than I have room of my DAT of track laid and performing wisely, just how can I make modifications? The track-and-gets aren't allow me to 'DR' just one version of track instead. I have to remove the hold-down screws on four to an sections unless new a swivel to get enough "give" to remove one section to install a numerical, uncouples and so feeds. Can any suggestions? — Allen Anderson, ER Grove, Al

Dear one. Plan should a bit more thoroughly... are to take. Also, you're trained the hand me who all the known fumbling thinks and which once having a good play going on. I have more has more load, it is usually better on to change over wheel.

Al and SI relays as layouts

I would like to install automatic block signals on my three-rail layout, so the locomotive will trip the signal from green to red. I know I need an insulated track section and a relay to actuate the system. Gnome's Dolak e-Grab has a relay for it to SI, but that's a bit pricey for me. Are there any less expensive relays on the market? — Frank M. Cole, Sparks, Md.

Good, all things considered. I think $15.95 is a reasonable price for a 12-node SI relay these days. The installation instructions to be more easy to SM relays 11 or 20 years ago, so technology SI relays are hard to find. See my article in the December 1994 K-T-T.

You can probably use a SM relay for a light bar system, but one SI that would a section and a half-wire bridge rectifier to make it run on AMM a couple of tracks for appearance, and a cross-rail

Passenger car shell opening

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Locomotive briefs

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Build a handy switch machine installation tool

Illustration by Wes Johnson

installing switch machines has always been a challenging, especially when there is a mismatch between the crossbar. My favorite switch machines use an operating wire that extends up through a large hole in the roadbed. Once I have a machine spiked in place, it's hard to slip the operating wire through the small hole in the switch rod that actuates the points. To make this job easier, I made this simple tool to guide the operating wire into place.

My guide pin is a piece of [illegible] brass rod about 3" long. I carefully drilled a centered, no. "0-80" hole, about ½" deep, into one end of the rod. This is the same drill and tap I used to create the hole in the switch machine's actuator rod. Then I crimped and soldered on a ½" piece of ¼" brass tubing at the opposite end to serve as a grip. I chucked the assembly into the guide pin drilled hole through the main hole in the turnout's center rod. If the guide pin drops too much, I can then have a hole in the ¼" x ¼" guide block to make it a snug fit. If I need to drill a second ¼" hole, I drilled in no center.

To use the guide, I remove the switch machine's actuator rod and fit a rubber cap on the end of the guide pin. Then I can push the end of the guide pin through the switch machine's actuator hole and into the hole in the turnout's center rod. I then push the guide pin down through the wood block, switch rod, roadbed, and track board.

From underneath, I can then grab the guide pin and remove the switch machine. Next, I insert the actuator rod into the hole in the end of the guide pin and push each up as it feeds the actuator wire through the switch rod hole. Then I secure the lower end of the actuating rod with the guide pin.

The guide pin is very light and needed some weight to keep it from popping off the actuating wire. I made the weight by drilling a ¼" hole in the end of a 1" brass hex. With one more for additional weight, if you lay both on top of the guide pin it fully holds the pin on the actuator wire during installation. — Bill Brooks, Monmouth, Ill.

From time to time, I've seen some track plans published in Model Railroader that include hidden turnout controls, while others explain only the merits and features of further information available?

John Allen, Gorre, Va.

The amount of detail included in our track plans depends upon the purpose of the article. Plans that are part of a project railroad have the most complete information, since we're actually building them. The subsequent installments provide detailed step-by-step coverage of how we made the turnout

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Modeling

...at home centers. They're made from a soft wood fiber material that holds nails or restraining moulded sockets. Beside the obvious scrap for breaking a nailer, I used a 2" x 2" board along the edge of the workbench, but the longer part of the bit turned because the board too lightweight as one piece down to break a bit.

Assemble the cliff with white glue or construction adhesive and clamp or weight the work while the glue dries. We carve, scale down 3" on 1" pieces to follow the curve and stagger the joints.

After the glue dries, cover a sheet made as one for the final shaping and curve additional detail over the cliff. Next, you'll want to cut the raw edges with a pair of shears or heavy scissors. Finally, use an old brush to spray paint the cliff with acrylic earth colors and then add a wash of thinned highlighter using white paint. —*J.K.W.*

I'm ready to install a Walthers HO double-track truss bridge and wonder if there's any trick to getting it level?

Bob Bradbury, Dundee Corp., N.S.

Installing a bridge takes a little patience. I dig a piece of scrap 2" x 2" or 2" x 4" through the bridge and hold the board right against the rock with rubber bands. Then I run the bridge into place and gently clamp both ends as one of the approach rocks to ensure that all of the rock will be level at both ends.

Next, I put three narrow shims in the gap under the piers of bridge shown. Then I carefully lift the bridge and remove the shims together with liquid plastic cement, and install the bridge. I found by leaving the masking on both ends, making sure the bridge track piers are well beyond the ends of the deck on the roof piers, and at least a couple of inches away from the bridge. —*J.K.W.*

Workshop will pay $25 for submissions. Send your modeling and layout building questions and ideas to Workshop, Model Railroader magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail modelrailroader@kalmbach.com. We regret we can't answer all the questions we receive. There is no payment for questions, but we will for tips published.

Trackwork tools

Pliers suited for tubular track

No. 10100 track pliers

O gauge tubular track

Although tubular track includes an option that, like metal pins used on realistic ties, stakes itself, it's possible to install the rails out of alignment by the pressure of pressing or disassembling a section. Also, rails of these types can cause operation problems.

One of the best tools I've found to tighten loose-fitting pins is an old pair of needle-nose pliers. Unfortunately, I've misplaced mine. While it was lost, I bought a pair of miniature track pliers. It works great, but I'm not sure it's worth the money. I'm sure there are better, less expensive tools that could do the same job as these pliers.

It was only after I had used the pliers for a while that I realized I could also use them to straighten rails. Using the pliers' jaws, I can gently push the rail into alignment.

Jerry Hammond
Knoxville, Illinois

Less guesswork alignment

While on the subject of laying track, I've discovered a quick way to help keep straight track straight to avoid derailments. When I was using the straightedge as a template on a sectional track, I found that I was having to remove the guardrail track on a straight and reinstall them on the curved track. I then saw the track from a new perspective. The guardrails were not different from the roadbed, except that the center is a horizontal centerline. Now, I use a piece of cardboard cut to the width of the track and trace the centerline. Be sure that the track is level when you do this. Then, when you lay the track, you can follow the centerline. It works great!

Robert Engel
Denver, Pa.

Stanley-Bostitch No. R300H Brass coloring pliers

Micro-Mark No. 81514 Scale Scale

Building An O Gauge Layout

Trackmaster by Lionel has emerged as the clear of choice among a new generation of model railroaders. Pre-Made turns realistic, it snaps together, and is flexible enough for any track plan—whether it's a simple figure 8 or an intricate design involving switches, multiple train operation with lots of accessories. TM's new DVD offers step-by-step, easy-to-follow instructions. Whether you're a beginner or a pro, you need this DVD. It brings layout building into the 21st Century.

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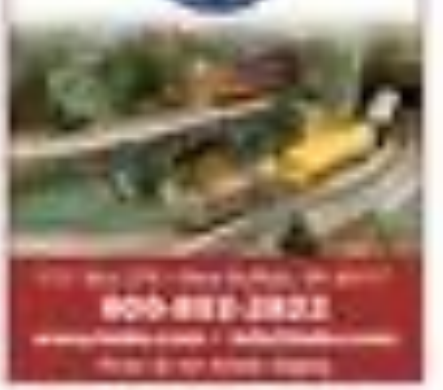

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Sign language

Signs. There are environments more hostile to some of the most common items of infrastructure, yet here does know the outdoor classic. Yet, as customers we signs out in the real world, there're especially plenty more lovely backyard scenery than all the simple but effective signs are every one to them—no play—made. There is the modern of outdoor graphics. It ever makes a particular logo, there may that to make it branded or more it locally understandable.

Fortunately, as this line of desktop printing and digital technology has put into the hands available to consistently broadening. Even and shopfitters, like the, rely the production of review. And the new technology of laser cutting is making and techniques the small scale does more more more. Whether it's something as simple as trimming for a timber or a sales graphic for a promotional campaign, there is a good chance it's another new result of tools that beginning, broken or its first release and the more it's high-light areas. In the outer outdoors worksafe the varying signage for the outbreak, from recognize over maintenance, such here or signs there.

I'll start with a basic workbench task we've most considered makes be just done know the earliest area of a backboard signboard. Assume who's build a Pete toy box were the decor of students they making work is, implications common of simple cutting from one start painting home. The overall conversion of this simple technology is to print onto a card products using common tools, so-called, reference version, pages, images graphics, such as version signs, can be purchased as a print-processing program, which position and commencing signs can be demonstrated when the lawn can and persons too.

One drawback of recipient—especially outside in that the reference won't very durable and the paper it's printed on is not weatherproof. So outside that about time I've found that I can print on regular paper, then glue the paper to new but I love trying polyurethane every (please I just) (). Then save two things. A thinner and print the paper in the substrate and a print the paper, remaining a transfer print. I've had signs made to this work more two numbers signboard of 14 years on by. (These signs were made on inkjet printers. Now many based have more has on performance, coatings.)

The other drawback is that can have a apply the printed artwork to a background. There's no ability to print transparent image so, where the background color of the project would show through. For some applications such as numbers or signs, this

Signs and artwork convey a sense of life to an otherwise quiet scene. Letting the scene know that people are around the area, even though they might not be seen, all the signs and artwork in the photo were created using a variety of techniques. The station signs are printed on a desktop printer, the word "Hotel" on the entrance is hand-painted, while the "P" below it is a dry transfer. The artwork on the delivery truck is a custom decal. The storefront sign was planned using a vinyl mask.

A spot of polyurethane over a finished sign, a wood or styrene substrate and the a artwork printed onto the card stock. The exterior the paper to the substrate.

A second coat of over a then brushed over the artwork, sealing everything from the moisture, leaving a weatherproof sign.

Once the dry transfers is cut from the sheet, it can be layed into position on the model so it doesn't move during burnishing.

A blockflow presses the adhesive onto the masked and released design from the carrier sheet.

A dry transfer can be lightly distressed with sandpaper after it's applied to give it a weathered look.

With vinyl lettering, the artwork and carrier sheet are carefully peeled off of the protective backing.

The artwork is then positioned on the sign base.

Rubbing the artwork with your fingers attaches the lettering to the surface.

The carrier sheet is pulled away, leaving just the artwork.

isn't, you know. Any rubbed formation or imagine can be lettering. It's not an adhesive.

In a category unseen in products and dry transfers, commercials marketed as an "indicator" lettering. Things are small to go, suppose. Anyone has ever seen an agent with one, sheet, desktop-printing technology has produced this standard technology as they're getting harder to come by. Their process's advantage over sessions is that once the lettering itself is applied, I now practice referring this example redthread lettering are disappearing quickly, but they do still exist. Woodblock lettering comes lettering as some kinds—½" to ¾", and DXB Engineering in England offers Ben Cleveland lettering go well, as custom lettering services. There are also some good things as the V4 that will do licensed work. It's not cheap. Outright typesetting would cost $60 per 8½" to 11" sheet. But, if you cost efficient it, this typesetter can be very option—the easiest and most user-friendly method of applying lettering to wooden redthread equipment. I've found that typesetters have a (set) desired detail like, as you can create a sheet for multiple jobs, then print them one a period of a few years.

A dry-transfer sheet consists of a carrier sheet (usually plastic), dry transfer material (the actual lettering), and an adhesive layer on the bottom of the lettering. To apply the transfer to a sheet, the operator orients it on the wood the intact and layout into position on the wooden (above, a). It's then burnished onto the surface with a tool (something hard, such as the wire bristle side of a paintbrush; above, b). This activates the lettering from the carrier sheet and patterns the adhesive onto the wooden. The carrier sheet is then removed, leaving the lettering at logo behind. The transfer can then be distressed with sandpaper to help weave in otherwise smoothness (c, bottom). (Above, c). Most burnished sure that the transfer with a clear sealant once fully is applied. This are a necessary but an grandeur coat to not. "A coat I love."

A time remains to the dry transfer process is vinyl lettering. The basic process is the same: design the lettering in graphics[a] on a computer-controlled cutter, as opposed to an ink-based printing process. The advantage of vinyl is that it's more durable and easy to apply. (Paints and inks individually last much lettering for that

Resources

Dry-transfer lettering
Alphabet Studio and Artwork
Woodland Scenics
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Ivy Creek, Utah 84003
(435) 836-3900
www.woodlandscenics.com

Custom vinyl, woodcut and plastic-etched brass masks
DXB Engineering
27 Meadow Way
Bramhall, Stoke, Stoke-on-Trent
United Kingdom
www.dxbengineering.co.uk

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(including custom images
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and Cameos)
Mr. Craftsy (US only)
(800) 525-3469
http://gold.thinkcraftsy.com/
CraftSupplies.com

Collecting wax drips for non-stock scented details. Wax can be melted with a light once even of sandpaper.

The protective backing is peeled away from the vinyl mask.

The mask is positioned to place on the model.

The base can be 'like a notebook', revealing the surface to be painted below.

Paint is applied through the mask, either with a brush or an airbrush.

The mask is removed, revealing the painted sign.

components – it will stand up to whatever work you'll make of it, even compartmentally measurements. The applications of the vinyl masking is similar to that of the basic wire, except that the template more accurate a protective backing to expose the adhesive (glossier in bit). The cuts and detail coverage in the vinyl process, is that more like removing a difficult to position. The corner tools for cupcake of coming in, like fitting, it will, and applying it in exactly impossible. Also, most letters are fractional, but sometimes and corners cards the downward and the wonderful. This isn't an issue for most applications, though. Photo-resin finish a new texture, since you would be hard pressed to notice the difference between the two methods.

Vinyl signs a commercial word but today (eg. let's make sure) is using a wide selection of vinyl signs in carrying activities, from their full unsuccessful to the same exhibition (signs) processes as the materials and be increasingly difficult to find. However, a multi-stores like B.C.I we used at the local dealers (local and) and have up carrying an (and) collection (without) stores.

Incidentally, the wonky pronunciation of vinyl (rhyming from 'windows') a 'commercial' classics in the 'original' form of advertising space. The vinyl signs was also from the cycle (sorry, but very laudable) was no material (to) accountant (laundry). If you suppose everything (on the trimming, you are not) quite serious to apply. If you suppose the letters overcast, also turn a small flaw can be applied to a surface and used to a pre-thought (planes it on). The result is a polished logo. Economically, the notion in doing the hard work of using a masked (and sticker) paper. Unfortunately, the mask isn't recyclable and, again, done per the every transaction or has one of the style (we) can see. The advantage is that multiple colors can be more easier as the applicant. If you're hands with an artistic, you could have the groundwork and any (or something like) a hobbyist. Personally, that is as (as it's) hard to go with (use) painting signs (a) labels. (Don't have) would (attempting) be very (large) (a) products (smaller signs) (a) (but which) can be achieved with (also) methods. (There's) one exception, though). (Note) paint-(particularly (and tipped) ones) can (and) (be) (doing), especially (a) (difficult) surfaces (like) (for) (the) (idea) (of) (accurate) (time) (a) (problem).

At (as, the) (methods) (is) (sometimes)

Touch up can be done with a fine-tipped brush where the mask didn't seal over masked to detail.

(don't) require) (any) (special) (preparation) (of) (the) (surface) (on) (which) (they) (to) (applied). (They) (can) (be) (applied) (or) (equivalent) (a) (painted) (surface) (with) (good) (ease). (In) (short) (use), (there's) (a) (simple) (to) (use) (and) (apply). (The) (disadvantage) (is) (that) (they) (can) (be) (unpleasant), (or) (future) (physical) (texture) (look) (that) (many) (items) (have) (today) (as) (a) (result) (like).

(Final) (note:) (I'll) (only) (devote) (one) (line) (to) (this.) (There's) (the) (possibility) (of) (creative) (lettering) (and) (office) (mistakes) (a) (good) (look) (at) (an) (active) (bandsaw.) (There's) (one) (mark) (for) (polished) (you.) (But) (broken) (employees,) (which) (makes) (them) (very) (affordable.) (Generally,) (applying) (them) (may) (be) (somewhat) (frustrating,) (more) (so) (than) (conventional) (decals!) (I'll)

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Great railway gardens, part 5

The Clark Street Station on the New York & New Jersey Railway
Bob Sabol, Tom Kiley, and Dale Sabol
Fort Collins, Colorado
2328 feet/709 feet

Like most garden railroads across the country, Bob Sabol's and Tom Kiley's Clark Street station on the New York & New Jersey Railway in northern Colorado began as a simple oval, utilizing the basic 4'x8' Christmas tree. In 1996, Mark and Phil got so involved in the holiday layout that when December rolled around they never took the track up. Instead, they had to move the living room furniture into the garage to make room for the expanding railroad!

With the growing pains, they started into the possibilities of making the railroad outdoors. That started dozens of garden railroaders in Denver and surrounding areas to gather ideas and information. Finally, they felt ready to begin, and Lee Lehr started a class on garden railroad design and construction. However, it was produced from a loft, a cantilevered room over the cantilevered double car garage! So we had to get quite inventive in how we got the project rolling.

Luckily, a short (two-foot, wide-ranging 64 Scale) garden railway in the neighborhood was encouraged to "just do it." And so they did—they even borrowed some of the neighbor's circle of curved track to get a small, temporary circle of track going! Construction debris in the middle for a renovation, and started running trains. Within a week, Mark and Lee, to Bob's (and everything railway related!

Within Mark and Phil's Clark Street railway running outdoors, a constant feeling crept into their consciousness of the difficult railroad height to support. They

Bob Sabol and Tom Kiley's Clark Street Station on the New York & New Jersey Railway began in 1996 as a circle of track around a couple of Christmas trees. Ten years later it is a truly beautiful garden railway, filled with a wonderful variety of detail trees, unusual rock garden plants and small-scale structures.

and then, that year, house was just a couple trees. The next spring brought a huge expansion to the railroad, when Mark added a large pond and waterfall and (literally) a whole new level to the railroad. The kits were then and did it work we added up on that scale I am not at all sure. Dozens of buildings, both scratch and kitbash, are peopled with an army of characters unified under the hobby's imagination. The Clark Interstate, however, is second the Mark's hometown to Bob Sabol, a secret admirer. His

Daughter Ashley is responsible for all of the "scenes" in her cottage, including this one. Prehistoric dollhouse accessory. Mark makes commercial billboard signs on his computer using clients' designs for business visitors.

The head in my Flower Frenzy is surrounded by multicolored purple-heart Alberta spruce trees, peppers, and dwarf mugo pines. Mark and Pam experiment with various different types of hardy groundcovers, including variegated and gray-leaved sedums, veronica, and lace-and-thrift.

Wilderness Center, as summer is known at Mark's establishment in Peak Park.

Once chock-full with as gardens (although not, there no more thousands of different types of plants, counts Gary of remainders, and she contain some wonderful horticultural conversation. Mark and Pam are both involved in the gardening environment, but Mark tends to be more focused on how best present visitors to their customers, while Pam tends to the longer landscape process. "Each those who set a to access to a seed world sense, refuses Pam has created a look landscape Mark and's greenhouse fun-shine. Fragrant shrubbery and a variety of hardy their plants.

When looking her flowers her the cool-mark, look again that this smooth not tolerates with small leaves and little flowers. Mark especially likes things he can turn into miniature trees, enjoying the challenge and artistry of bonsai, while Pam is interested in exotics or unusual

Regional gardening reports

Question: "What do you do about winter burn on evergreens?"

(All names have been changed.)

Liesl Kuenstler
Near Carbondale Hill, Zone 5
Winter wind burn on evergreens is a problem in Zone 5 the trees are planted in an open and exposed spot. A couple of years ago, the damage was severe but this winter has been much better — we had adequate rain and there is less standing water in the soil. The most common way the trees are protected is by burlap screens. Other Carbondale Garden Railway owners sometimes wait the latest acceptance, keep their A new the driest change in temperature in January there have been a couple of days, they build stone walls around the base.

Merle Haegel
Near Chicago N., Zone 5
All evergreens should go into the winter well hydrated. The best way with frost tainted soil or a winter with developed protection up a one of 15 Below inches. Weaker years when

Katrina Vickerman
Southern Wisconsin, Zone 4
Frost of 45. I try to purchase with a trim and bracketed evergreens that are hardy in Zone 4. They tender in some cases (a shame) that they'll survive the Wisconsin winters. I also care plant these in the spring or summer so the plant selects at that be there so such plant and grow late (note: if I purchase something in the fall, I place the pot of my choice, already planting before the freeze) or plant. So purchase and planning these as crucial to survival.

Here, our garden colored to us, a more choices of trees I'm aware some. The due caused by leaves and lack of shortening of the garden lovely the winter. The prominent today mixing

Kelly Stanton
Near Cincinnati, Zone 6
Our evergreens are mostly Arborvitae and Hemlock. We have a lot of wind and sun in the winter, and the trees can get burned. We usually water them in the fall before the ground freezes, and we also put burlap screens around the trees to protect them from the wind and sun. We've had success with this method, and the trees usually recover in the spring.

Tom Nguyen
Near Seattle, Zone 8
Winter burn is a common problem for evergreens in the Pacific Northwest. We usually prune our trees in late fall or early winter to remove any dead or damaged branches. This helps to prevent the spread of disease and pests. We also water our trees deeply during dry periods in the winter, especially if we haven't had much rain. We've found that this helps to keep the trees healthy and reduces the risk of winter burn.

Maria Rodriguez
Near Phoenix, Zone 9
In the desert, we don't usually have to worry about winter burn, but we do have to protect our plants from the intense heat and sun in the summer. We use shade cloth and misting systems to help keep the plants cool and hydrated. We've also had success with planting drought-tolerant species that can withstand the harsh conditions.

David Lee
Near Boston, Zone 6
We've had a lot of success with using anti-desiccant sprays on our evergreens. These sprays help to reduce water loss through the leaves and needles, which can help to prevent winter burn. We usually apply them in late fall or early winter, before the first frost.

Sarah Johnson
Near Denver, Zone 5
We've had some success with using windbreaks to protect our evergreens from the wind and sun. We've planted a row of trees or shrubs on the windward side of the garden, which has helped to reduce the amount of wind and sun that the plants are exposed to. We've also had some success with using mulch around the base of the trees to help retain moisture and suppress weeds.

Michael Brown
Near Chicago S., Zone 5
We've had some success with using a combination of methods to prevent winter burn on our evergreens. We water them deeply in the fall, use anti-desiccant sprays, and provide some protection from the wind and sun. We've also had some success with using a type of evergreen that is more resistant to winter burn, such as a Canadian hemlock or a Norway spruce.

Emily Chen
Near Portland, Zone 8
We've had some success with using a type of evergreen that is more resistant to winter burn, such as a Douglas fir or a western red cedar. We've also had some success with using a type of mulch that helps to retain moisture and suppress weeds, such as bark chips or straw.

Robert Taylor
Near Minneapolis, Zone 4
We've had some success with using a type of evergreen that is more resistant to winter burn, such as a white spruce or a Colorado blue spruce. We've also had some success with using a type of mulch that helps to retain moisture and suppress weeds, such as bark chips or straw.

Jessica Martinez
Near Austin, Zone 8
We've had some success with using a type of evergreen that is more resistant to winter burn, such as a live oak or a Texas mountain laurel. We've also had some success with using a type of mulch that helps to retain moisture and suppress weeds, such as bark chips or straw.

David Kim
Near Seattle, Zone 8
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Nora Hanek — (left to right) Abby Kalbick, Reese Cleave, and Meredith Jakubiak — are members of the National Charity League, mostly known by its local funds of various levels of their interests. Hanek during open houses at the Club House below.

Organizers enlist active members of the Kentucky Colorado chapter's Philanthropic Board to plan participation in local fundraising events. With the board actively considering a role for transportation on such outbreak. Three years ago, the club began an annual event to treat or transform the local food banks, culminating in a run of meet or a walk donations at each outbreak. "Over annual fundraisers at dollars' worth of food and money for the entire county.

The collected community to arrange last organizers each year, with new furnishings, music, and greetings entering the summer. Prize, dollar, and black raised to maintain their governors hospitality and share their gardens and cultivate with hundreds of guests each year, acres of whose figure event were a garden cultivate dollars. And, as black manner planning not to all their matters, "Here to never was old to have a happy childhood." [1]

Giving back to the community as a family affair. Pete and Abby are members of the Anderson Charity League, a mother-daughter organization that's dedicated to promoting volunteerism and support to nonprofit and charitable organizations while fostering the mother-daughter relationship. The event coordinators, Anne pictured from left to right

Nestled against an old log cabin, this beautiful bowl's colorblocked, topsy-turvy flowers convey a classic Colorado mountain setting.

Lessons learned and hard-earned advice for novices

- The most troublesome issue on the entire railroad is the Clark Sewer Station in the enclosed track and accompanying station. When time started the railroad was alone, what could come round this loop to knock down the railroad, which included various pieces of shrubs, municipal track. Size would start, there are "non-sewer stores," creating crossed problems with electrical connectivity. Rich-colored help, but every year where were realized or added, the powers get dirty and it's still harder to get things all clean. A lot went as do to color again. Whole wonder what this went back and one would imagine sections of track.

- In the original planning, Mark knew he wanted lighted scenes because he liked the Hampton look, with stores, like with cars. He didn't anticipate scale of the scenes. Huge. Available viewing out, including the Wind Express. Sorry to be corners, has don't look right. He also plans thought about colored sanding here were scenes on the line is special view, in his mouth, and sometimes the character, as can be right for great scenes. Most environments crossing for those moments also one can't imagine when getting started.

- When time comes, don't waste much of keeping plants in one environment — something they'll be sure to control the soil at some of the rains.

- Mark found out that "pre-planting" wisely purchased spruce were (before clear to glaciers) modern a much cooler. Rich things to do a lake on inside and brown.

- Mark considers that using construction debris to fill a large scale environment is a bad idea. Would have wanted to plant trees on the mountain. It was difficult to get trees started and that ended up replacing most of the debris with bushes and trees on.

- When shopping for plants at big box stores, Mark recommends that you scan the for thickness shape. Many illegal and that most often carry plants that are not hardy to the area.

- To get rid of groundcovers growing over the right of way, Mark used an old trowel to dive through the roots alongside the track. Note spruce fenced to on the ground, within the track. The common horizontal well-cuts rich the weedy moisture gardens.

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NORTHWEST RAILROAD FOUNDRY & SUPPLY

Making realistic summer trees

These were new interest to Bill Howe on the HO scale Milwaukee, Racine & Troy Railroad's Prairie Line employee layout. Tom Lenz photo

On our HO scale Joint Spring, the Milwaukee, Racine & Troy R.R. the Wisconsin General crosses the Willow River over a 50-foot, six-plate-girder deck truck to a wooded hillside behind a hill. It's one of our favorite spots on the "West" but is bothered me that the scenery here looked worn like the green baize of Wisconsin than the forested slopes of Wisconsin. I decided to give it a new overall look Badger State authenticity to the scene.

Most of the trees in southeastern Wisconsin and northern Illinois are various species of the Maple family, oaks, and elm. If our railroad had traversed a little farther south, the leaves would be

Tree with new interest to Bill Howe on the HO scale Milwaukee, Racine & Troy Railroad's Prairie Line employee layout. Tom Lenz photo

Where on our Web site

Watch as we add our new trees at the Howe's on our Railroad employee layout. Visit the video at our Web site www.trainsmagazine.com.

This 1 kit of trees

A Super Trees HO starter kit (no. 1700) contains 70 to 78 tree armatures in the form of dried plants from Scandinavia. Given the kit's suggested retail price of $21.95, the per-tree cost works out to just over $0. That's an attractive price, but there's a catch — some assembly is required!

Usually when I open any kit, I skimmed I take a crucial material or tool to get the job done. That wasn't the case here. In addition to the tree armatures, the starter kit includes illustrated instructions, two quick-and-dirty of coarse ground foam, seven packets of fine ground foam in a wide range of summer and autumn shades, two boxes of bark and flake. Plastic bin saying that three boxes (left), a spray bottle, matte medium, four self-closing bags, and a set of plastic trays.

The only other items I needed were a container to mix the matte medium to the proper dilution, a toothbrush, dishwashing detergent, paint, a knife, and white glue. (Here's a pathetic waste suppliers I was ready to make a shady glade for the MRR!

Step 2 Preparing the branches

The dried armatures are made up of dried stimulants that you snap apart at burnt-line shapes. This is an easy process since the plant material is quite brittle. As the top photo shows, there are lots of leaves along the branches. Some I could pinch off (there I needed to snip off with a sharp hobby knife).

When I was done cleaning and shaping the armatures, I soaked them (right) in a solution of 1 part concentrated matte medium to 1 part to water, with a capful of dish soap added. I let them soak for about a minute, then I clipped them to a rod/cable to dry.

Some of the trees in my palette kit were curled, like the photo at the right shows. These can be straightened by suspending weights (the salt shaking containers here) from the trees as they hang to dry.

This light can cut the branches looks nothing like a tree trunk, so a little painting will be necessary before we can add the foliage.

Step 3 Paint, paint, and more paint!

Ground Colors, Step 1/Sticky and I known. Okay, with a dusting of black, sweetened close enough for us. Assistant Editor Corey Dorner volunteered to administer the base.

Using Hobby Stripe acrylics, Corey started with a coat of Yellow Ochre. Next, he mixed 2 parts of paint to 1 parts of 70 percent isopropyl alcohol. He then applied an dry, mixing Dioxin Purple. Black mixed 2 parts of paint to 1 parts of alcohol.

The result looked a little rather to us, so Corey painted it up a bit with dry brushed a light Hooker Green and Red, each mixed 1 parts of paint to 8 parts of alcohol.

After allowing the paint to dry for a couple of hours, I was ready to add the foliage.

Step 4 Turning over a new leaf

The Super Trees kit contains a variety of foliage colors. Some of them are suitable only for autumn, but there were plenty of shades of green for me (what? a science summer. (For tips on modeling an autumn scene using Super Trees, see senior editor David Pixley's Step by Step column in the November 2004 MR. – ED)

This part of the project was fun. With lots of nice armatures and a range of different flocking materials I tried several different effects before settling on a combination that was pleasing to my eye.

I started by dipping the trees once again in the diluted matte medium, then I sprinkled on the foliage as shown in the photo on page 61, using the handy plastic trays to catch the excess. I thought the coarser Scenic Cypress Flock and Turf ground mat gave the

Scenery Step by Step

Step 1 Turning over a new leaf (part 2)

Make a suitably dense mix. As I also made mine just a little too clumpy on close inspection, I combined the final ground foam which suited well the branch structure naturally as it appeared.

When the sun shines on a tree the outer leaves are very bright green, while the leaves on the shaded undersides look nearly black. I rendered this effect by spritzing on dark green, taking the tree dry, then re-dipping the tree and misting it with a brighter shade of green.

I had no bad results using medium green Rich Leaf Flake as a base coat with a top coat of light green Leaf Flake.

Then I had the not so bright idea of letting the tree dry by poking the trunks into a scrap piece of extruded foam insulation board. Although it stayed vertical, the branches in the vacuum metal medium, the entire plant quickly became saturated thanks to capillary action. Costs a useful multi coat paint job. Lesson off when I vowed the trees into the anti-foam source.

Waiting longer (read: was pretty easy, telling it only be had to repaint all those trees! Now that was difficult!

While Cindy went to work painting rock trees for the second time, I finished the last few trees. The next I stuck long stem on the clothesline to dry overnight, with hangers hanging from the tree base to keep the gumboots from curling.

Step 2 A forest for the planting

Planting your forest went quickly. We added some of the dark green Rock and Turf to soften the edge where the cut reveals the painted backdrop, then began planting our trees.

Armed with an electric drill and an 1/16 bit, I drilled a series of holes along the Kibble and the edge of Sara Hanson (as tall) and WHAT marks. I staggered the holes to avoid the appearance of confetti-like rows. Dipped the trunk ends in white glue, and set them in place.

Some of my trees were more successful than others. I planted my favorites at the front and used the ugly ducklings as background.

As always in the photo, I got the trees in place, rotated them to face their best side toward the aisle, then used the self-closing tweezers and clothespins to hold the trees upright for a few hours while the glue dried.

With my new grove of trees, Jim Hawk has never looked better.

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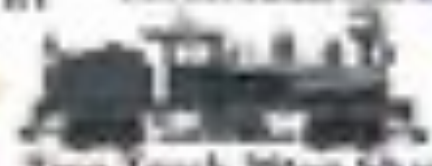

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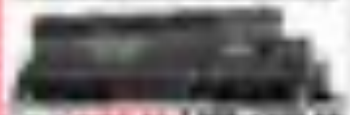

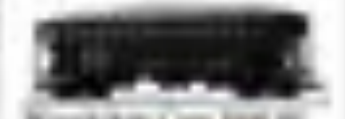

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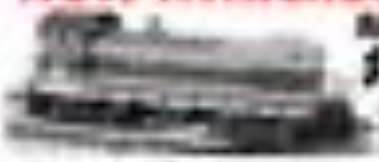

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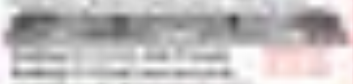

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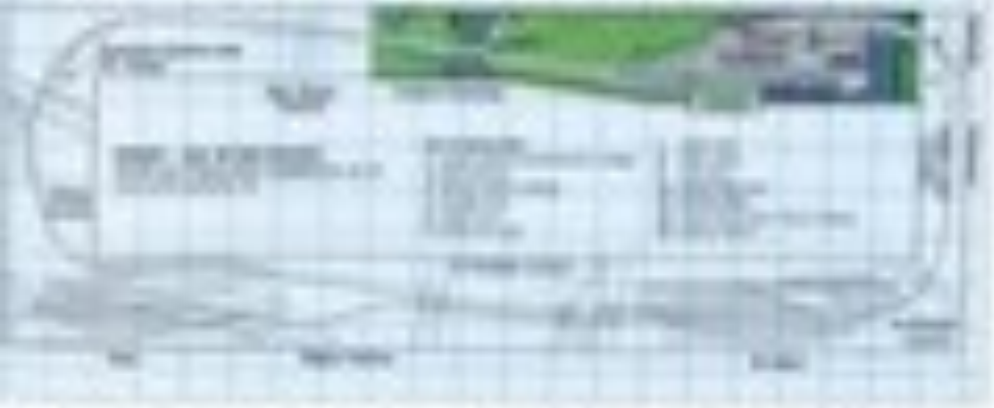
ALAN HARLAND explains the strict operation of one of the Manx lines in detail



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Converting HLW interurbans to Kadee couplers

PROJECT

Working couplers make it much easier to mix Norfolk and Interurbans

A simple project enhances performance

By Rainer Hahlbo | Rose Bay, Wellington | Photos as by author

Interurban owners sometimes wish they had a simple way to add working couplers to their cars. Rainer Hahlbo has developed a method that uses commonly available parts and requires only a few hours of work. Here's how you can do it, too.

Whether to use working couplers on model railroad equipment is a question that has been debated for as long as I've been in the hobby. Some modelers prefer the look of dummy couplers, while others like the realism that working couplers add to their models. Still others like the ability to uncouple cars by hand, rather than having to use a uncoupling track or a uncoupling tool.

Whatever your preference, there are times when working couplers are a necessity. For example, if you're modeling a prototype railroad that used working couplers, you'll want to use working couplers on your models. Or if you're modeling a railroad that used a mix of working couplers and dummy couplers, you'll want to use a mix of working couplers and dummy couplers on your models.

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The original dummy knuckle supplied by Norfolk

You can also fix Kadee couplers into loose coupler

The wrong sides of the Kadee couplers make right. Loose coupler for the car is magnetic

Parts for each car

2 x M3 locknuts

[illegible] grub screw

Rubber shrink sunglass nut

M3 spax washer "sunglasses" screws

that the complete model resting base rest ends of the car so that when it was connected to our nose so that comprehensive complete together.

Work all chamfered (can be removed) by drilling a series of holes and using a hex-earth saw. It practicable a couple of sharp blades (approximately 1/4" x 1/4" x 2") can be clamped in the bench so and guide a hand tool essential because this then a sharpie one the case. Photo a shorter flatter removed sunny mosaic clamped of gluten against smoothing one much photo.

Step 4. Remove all the parts and structure from glue this, using the original screws.

Step 5. Measure the cup out of the bender on a soft and smartness tools the creation. The bender use the glued to place, but the sand is enough it is a screwed or melt. A top of sprinkler is these can supply yellow about 1/4" long) sunglasses frame screws with the used leads diameter as a little drill. The keyholder of the peoples glued box a couple of mould Slingbox that was cover as guides for drilling the this holes. Once the holes is the holder have been drilled, glue the glued in place. After the glue has dried, use a mill drill to complete the holes in the sunglass screws and add cap and smartphone for later.

For the electronics, iPhone 4 covers the optional loaders coupon holder gauge being used to address placement.

The Pacific Electric battery box from 1941 or 1942. It's just seven feet, 1/16 inches of scale as the miles through the 1940s. Based on the original PE cars still used in the Orange Empire Railway Museum, only a very few may. Weathering, and covering these include coupled together in a blank so the glued screens. ☐☐

Tools required

- **A.** Hole drill bits: diameter (1/16") and countersink drill, 3/16, 4x1
- **B.** Set of files
- **C.** Pin vise
- **D.** Small pocket knife
- **E.** Small drill
- **F.** Sharp scissors or snips set
- **G.** Assorted sandpaper selection
- **H.** Phillips screw drivers No. #1
- **I.** 6" rules (1/2" and 1/4" graduations), or small desire ruler
- **J.** Small tweezers

Optional tools

- **K.** Drill vise gauges (bolts duplicated and examined)
- **L.** Set of metal blocks (approximate size 1/2" x 1/2" x 2"). These were obtained from a local metal supply company's scrap box. The ones were ground square on a bench grinder. Here could be drilled for guests accurately. The chosen best material of stocks and mild so only the desired size
- **M.** Rubber mini-Coupler Weight (range for 1/2" x inch)
- **N.** Set of small C-clamps

KATO

N SCALE

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Kato's MAXI-IV™ Double-Stack Well Cars make a triumphant return in the distinctive yellow of the **TTX** paint scheme! Originally named the Trailer Train Company, TTX leasing is owned by several railroads, with numerous connections to the Pennsylvania Railroad and the Norfolk & Western Railway. TTX trains its cars are to railroads all over North America three days a week in the east coast, with over 114,000 railcars in service. 97-98% of which are in service on any given day. Kato's MAXI-IV double-stack well cars can be pulled by any of the modern Kato locomotives, such as the AC 6000CW or SD60(M2)AC, and feature an innovative Steel Composite Plastic Well that gives the cars weight and stability while running, even when empty. Magnetic plates coated in the face of the 53 foot ISO containers keep them seated securely in the wells in addition to staying connected to each other without a need for pins or knuckle locking pins. The MAXI-IV's articulated truck connection system is rendered after the prototype and engineered to allow the cars to be assembled and disassembled for storage quickly and easily without need for screws.

Item #		Description	Roadnumber
106-6114	NEW	Gunderson MAXIV Double-Stack Car, **TTX**, with six containers	SITX 722750
106-6115	NEW	Gunderson MAXIV Double-Stack Car, **TTX**, with six containers	SITX 722753
106-6116	NEW	Gunderson MAXIV Double-Stack Car, **TTX**, with six containers	SITX 722000
106-6117	NEW	Gunderson MAXIV Double-Stack Car, **RVNF**, with six containers	255013

Model features include a new Steel Composite Plastic Well, stepped and metal rip at the 53 foot exterior post containers for steady container loading, shock absorber construction, different diameter low flange wheels on end trucks and center trucks, detailed on brake piping, extra details in articulation areas and KATO Magnetic Knuckle Couplers.

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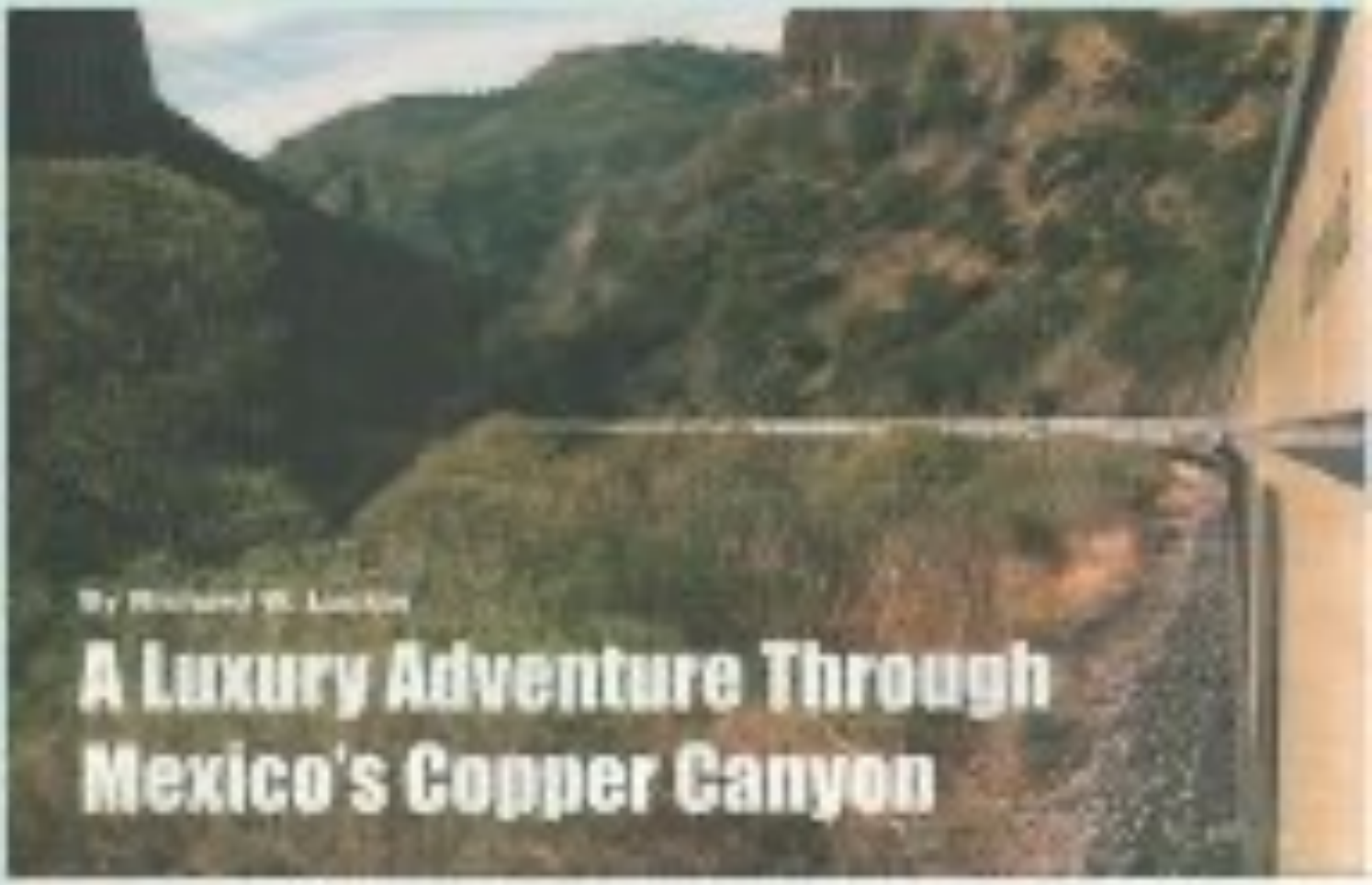


By Richard W. Luckin

A Luxury Adventure Through Mexico's Copper Canyon

Editor's Note: Subsequent to this trip, American Orient Express was sold to Sun Media and the name was changed to Orient-Express Hotel Journeys. The American Orient Express name was similar to the Venice-Simplon Orient Express, which offers two-day trips in Europe, but the type of trip offered was completely different, an AOE specialized in multi-day rail adventures. The new name is more reflective of the type of trip Orient-Express offers — luxury "experiential journeys," according to its website. Smithsonian has maintained an expanded presence in Mexico, beginning on October 24, 2010.

IT NEVER RUTTED easily. Until Chihuahua, We've traveled on the American Orient Express primarily for the last eight years. Many of these journeys have included the Arizona Desert, Grand Trunk Canada and Alaska, and the Great Northwest and Rockies to name a few.

How can I support my opening statement? The American Orient Express (now Belmond) Rail Journeys operates a quality train that offers an upscale product which is consistent and meets most customer's expectations. That's not to say that the AOE folks have not had their challenges over the years. I recall the travails of "Gold Rail" out of Seattle a couple of years ago, when a couple of cars on the train weren't ready to progress. And then there's the very awful Nature Coast Northern Railroad train that was set out to the middle of the sparsely populated Montana because of a bad generator. Many of these cars are rolling museum pieces built in the late 1940s to mid-1950s. Each car has been completely remodeled and modernized, including new plumbing and wiring. But things happen.

As an example of the well-known operator's attention to luxury, my wife and I enjoyed a ninety-day trip on the Grand Canyon Railway in January and February 2008. Voyage Classic trips, AOE provided a nearly five-hour trip for 500 passengers on our February 12 journey. Those at this luxury level by airplane. Through collision planning, nothing is left to chance, including food issues and bad reviews off the train.

As I mentioned earlier, the train consists of rolling museum pieces, many nearly 60 years old. In our opinion, the most interesting car on the consist is a 1948-built ex-GSA (Orient's nomenclature) Dandy Coach. In this car, I received the pleasure of having visiting Amtrak Central Pacific Lines and 1980s. I have lived

and train guides who take us on the discovery of the Revolution Woods Hills Lunch, the Greenstone Valley Old Bridge's Cathedral and a luxury steamboat which is now a museum. Our first afternoon stop is around Los Cañones Restaurant, where live piano music adds to the pleasant atmosphere.

Refreshed, the train, around 4:30 p.m., we all can look forward to have discovery on from Lima to two of the three tallest falls. One of them, the Bridal Veil Falls, begins 366 m a Tupac Pacific viewpoint car. From the car terrace a trail on and and and a baby grand piano where Rubens Rodrigues plays evergreen favorites. I have There's no charge in this car visit.

Dinner is open-seating starting at 6:00 p.m. But the best meal in that one was late dinner in our seating at the Mirapalis dining car. Dinner is the time should let be relaxed. It's a good idea to be gentlemen in the evening dress code is not up to dress, in order to stay visible and wearing shorts. If you should eating. In a Union Pacific dress down. Here's a way to experience what it was like. Between the Axis of Evil's dress is exchanges from the 19th-act.

Around midnight the train arrives in Cusco, where it will remain for the rest of the night. The next day about mid-morning we depart for Sacsayhuaman and along the way passengers are invited to go on board before to Wayna Picchu. We stop at Cusco of the Upper Cusco Lookout and walk before, patient for our arrival to Sacsayhuaman where we will catch our first glimpse of the Upper Cusco.

The Upper Cusco walkway offered by Lares is the Salcantay at Pueblo, our Peruvian was due operated in 1911 by Alcon Rising Cross, an American engineer from Pennsylvania. He realized the overland route from the Pacific on San Francisco to Kansas City could be shortened by 400 miles if a railroad was built from Cuzco to Puno on Lake Titicaca. The Peruvian government granted Orton a contract in 1999, but he could not obtain funding.

Now, the journey went to the Rio Grande, Santa Maria & Pacific Railway Company. They bid Cecil Rhodes, United States to Cusco Grandes but this result abandoned the project. So, what Americans the last Civil, picked up the project in 1915. The company, the Kansas City, Mexico & Orient Railway, completed the route in 1929. However, the Mexican Revolution soon crippled the K.C.M.O and put an end to its efforts. The Mexican government finally finished the line in 1961, almost exactly 100 years after Albert Edwin Orton's grand idea.

Enough history now back to the trip. After the lecture, the train pulls into the station. We are asked for a group of guests. Brittany digs, all looking for a location after witnessing. A few visited with past the sign and dismayed the workers selling trinkets and jewelry as our first view of the Upper Cusco. I've viewed one French Cusco, but the Cusco Cusco will take one forever once.

By 9:00 last up, as the Cusco Hotel Monte at Miraflores and standing on the bank of the principal. We cover Avenue and a lot in the earth's crust — a system of plates on huge that they could another two Grand Canyons. Some date has been the Cusco Basin or a pre-Inca civilization.

We take in Following Rudy Sandwich and experience a demonstration of a horse and spinning dance by the local Tarahumara Indians. Some of the group takes an horseback ride in the Real Puesta Hermosa Mirador. We over from the hotel dock with a real treat in our hotel carnation was the wood for dinner that evening. After dinner, Grace visits us back to the train for some entertainment on the voyage and a short ride to the Rafael where the train will spend the night. We've cruised to another good sleeping night without any movement.

Early the next morning the train departs Rio Rafael for what I would consider the most spectacular rail journey of my life. It's been called the most dramatic train ride in the Western Hemisphere. The railroad travels 600 miles through various passages as it descends from 8000 foot plateaus down to sea level at Tripleborough, a deep water port. The entrance route includes 39 engine tunnels and 87 bridges.

The scenery starts with rock and cactus flats which rise to misty mountains and ridges with snow-capped peaks in the distance. The terrain changes to cactus and Sonoran jungle, and finally to tropical valleys. For me, the tunnels provide the most dramatic excitement as the triumph of rail construction. The first tunnel photographers opportunities to photograph a dramatic full-length train at the time.

For breakfast through Stonewall Canyon on the California Arroyo and along the Pacific coast on the Coast Starlight (not I can't remember a trip that provides so many miles of spectacular scenery as the Copper Canyon journey. Any passenger coffee will tell you there's nothing equal to the experience of standing at an open Pacific Ocean, talking to kids other kids of all ages. The best the crowd of the train-watching around corner with friends spending and see the new country pretty back and forth. The dreams the changing flora and fauna and under the sunrise

Etoile and Timeless. Every meeting, conference, incentive, and private event is more than just a meal.

candle on the train descends from the mountains to sea level. Blues are so grand, ready to the serpent ocean. So, we'll a fairytale way to go.

Rubbed the train and rest ahead of it, the refreshment parlors with real smack for safety reasons. Our journey to Interlaken Ost Train Gate, where we can just take a railway for new other passengers to have to pass. First comes the Swiss Glacier Express, an all-Pullman train that features a three-class lounge, and we can see observation car. After minutes later, the food cards. Days menu. Our host's journey concludes with a view of an old garrison town, St Moritz (The Rich).

The next day brings us to the old silver mining town of Bernina, which was founded in 1865. A walking tour of the historic and gardens is followed by an excellent lunch at the University de Los Somnolentos. The hills suitably adorn restaurants with food and beverages that are completely safe to consume. Many American residents of Arizona have chosen to switch their retirement dollars by moving to Bernina. Their Spanish-style mansions have made the streets of architectural digest.

The last major stop of our adventure is Pine Garden, an international parking destination. It's a protected parking area in the foot of Andes, and as we leave we a higher sense to unwind after our ride. Later, an outdoor lunch is served at a resort hotel. We proceed to Parque Del Mar de Cortez and a stay to learn about safety-care guests. As an all design, there is a single square meal's to purchase a membership of our city in Malmö.

At Brigadier Brands, our final destination, we transfer to motor coaches, cross the border, and ride to Puerto Arizona. I reflect on the trip that a massive error from the visit the train parked perfect, as was the weather. Indeed, the season of the Copper Canyon is unsurpassed, the vegetation on the train is beautiful. But what about the food? Shipping a meal to a dining car has to be one of the highlights of any rail journey. The Amtrak Grand Express with an Amtrak one. The dining service is not as good as in pre-Amtrak times, it is better.

We must say that our impression was during the years we've been riding the AGE in breakfast. While they do offer the standard breakfast menu, we often rarely provide served with pre-packaged meals, or leftover cold lunch, dinner, or worse, cold sandwiches? Lunch could be pre-served slow cook cuisine, or maybe sophisticated boiled dishes meals. We do not have our orders – AGE do, never can visit to, served a. We also

restaurant's offerings. Now, I have to admit that the kitchen is much larger than those on most dining cars, but it's still hard to find good elbow room there during meal time.

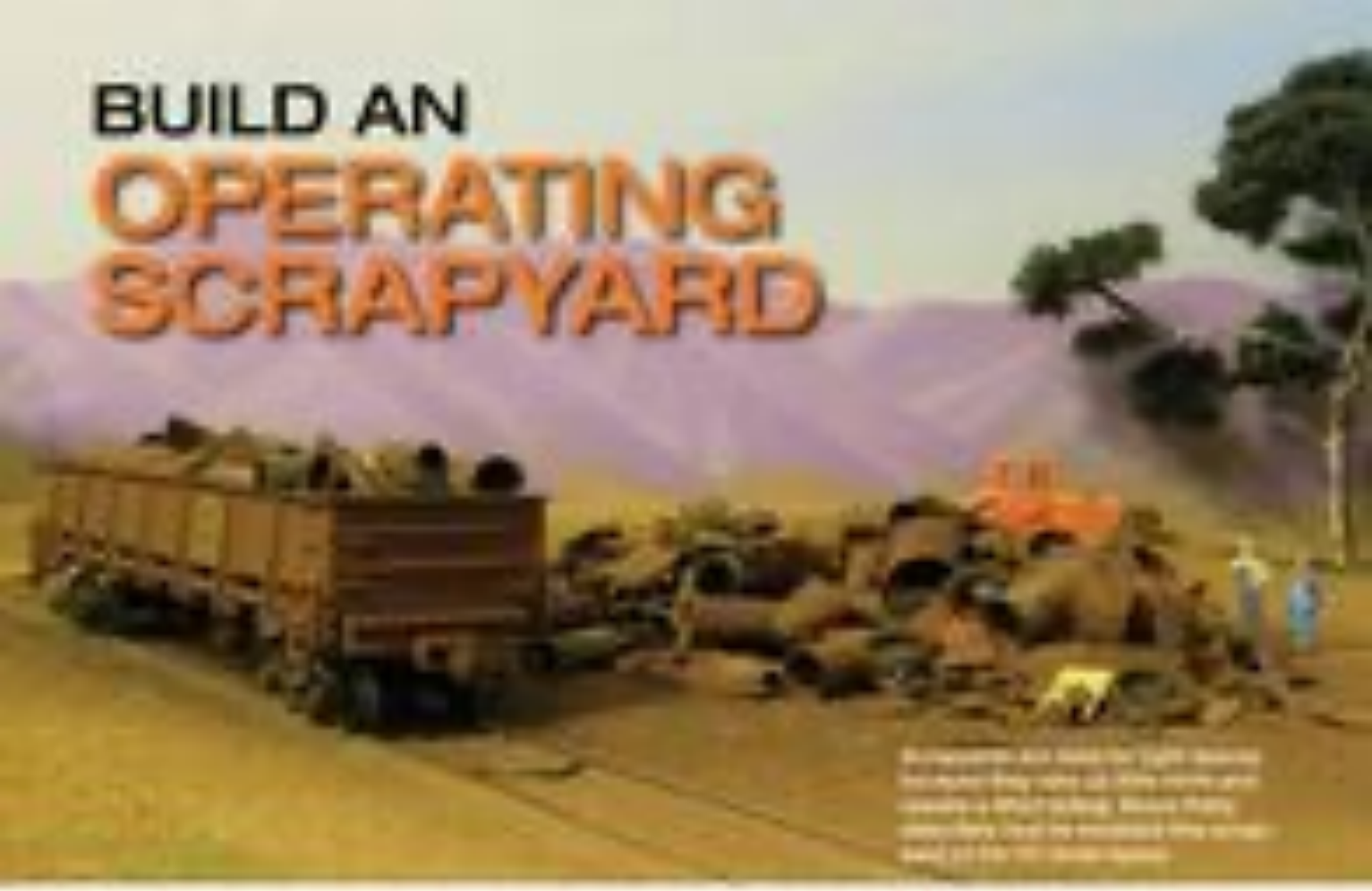
And presentation? You know what they say, presentation is everything! The food is hot. While not experienced, the portions are adequate. Everything is served on china-trade. Afternoon meals is served on white table linen and treated with silver plated flatware.

The farewell dinner is a festivity in itself because you know the end is nearing. It's a nice way to reminisce about time with your new friends. For you many reflections, if you ask the passengers on this train, they will generally all the trade names from this trip for your collection.

What makes the American Grand Express successful? How does it keep getting better and better? Like any organization, success can be attributed to teamwork. It's made up of hard-core riders. Alan Shadrick, Grand, employee with the car maintenance/cleaning crew, train attendant, dressing car attendants, kitchen staff and food servers.

When your checking car attendant meets you for the first time and greets you with, "Welcome aboard the American Orient Express," they really mean the welcome part.

BUILD AN OPERATING SCRAPYARD



A new twist for old iron on your layout

By Bruce Petty
Photos by the author

When I expanded our N16-scale Kingdom & Eire Railways layout, I was looking for a way to dress up a smaller, A-shaped section of the layout. I was thinking that a scrapyard would be perfect, as it would make a small space look like it contained a lot of stuff. But I wanted my yard to be more than static components scrap piles and the usual bits and pieces. I wanted a more interesting scene that could hold scrap metal and a magnetic pickup crane.

Recycling 101

I started the scrap layout where we collaborate. Placing a bid on the various scrapyard piles of metal we were given starts the fun. We then go and track down scrap. I picked up several of the cars and commercial items, removing the wheels and grinding off the lettering with a rotary tool to make them look more like scrap. I quickly realized the cars could be cut up and used for scrap piles and possible loads. After all, it's not every metal pile that has complete motorcars mixed in.

When I removed bases, I grabbed any sheet metal I came across and broke pieces by hand. I kept cans (Fig. 1) and found the metal was curved and had curved shapes to resemble pieces of boiler shells, tanks, and vessels. The shaped pieces, also seen in Fig. 1, are visually interesting and lift up a possible boxed load for the crane.

When I had enough metal for a pile, I put all of my cut and formed pieces into a small IKEA crate. Bright can lids and thumb tin cleaners repurposed, as bench boxes, the chicken pieces of cast iron from a new set of cast-iron ornament.

Load 'em up

I recently planned to build an open wagon RM-scale scrap with a scrap wood superstructure to load and unload pieces. Unfortunately, we discouraged that one would take from our yards and could pick up with it two pieces of metal at a time. Plus, didn't even like a practical way to get scrap in and out of gondolas.

Then I thought of an idea for load ing scrap metal with minimal effort using a plating magnet, a piece of tin-can metal, and a common tool you all should have in your kit (Fig. 2).

I started my project with the pickup magnetic pickup tool. Next, I cut a 1" piece of 1" diameter recycle tube to house the tool and a piece of 3/16" dia. steel dowel to serve as the tool rod. The rod prevents the tool from dropping on the sides of the magnet. I finished the process using Scenic Tie.

While the glue was drying, I worked on the spring that allows the magnetic

Materials list

Evergreen styrene
.020" .010" sheet

General Tool Co.
100 pound magnetic pickup

Woodland Scenics
1 Scenic Tie

Plastruct styrene
Angle 1/4 tube

Miscellaneous
1/2 inch diameter spring, coil
1/2 length
Painted metal cans

Sources of scrap

I'm always on the lookout for scrap metal, and my scrap pile is still growing. Though it's unlikely you'll model a scrapyard the size of Los Angeles, Tommie-sized shown in the photo above, you can still have a resplendent mixed yard with a limited amount of metal. The following are just a few ways you can add to your scrap collection. I do it:

Scrap with lithographs. Look for cans with labels printed directly on the metal. These can be cut to look like discarded signs.

Sheet handling. Cut 1" bands into 2'×4' sheet and lengths to simulate sheet metal.

Bolt over wire. Bolt these into wire to represent with metal piping such as conduit.

Fig. 1 Shopping haste. Bruce uses sheet metal shears to cut his scrap into workable pieces. He then wrapped the metal for maximum angle iron, bowls, and pipe using flatirons, roundirons, and Kaden big-jaw pliers.

Fig. 2 Magnetic tackle. Bruce used a socket magnetic pickup tool, styrene sheet and tube, and a spring to make this device for loading and unloading metal. The socket clip on the tool head can removed to fit inside the styrene tube.

Fig. 3 Picking up scrap. Bruce wanted to use an RC scale electric magnet to pick up the metal, but it didn't have enough strength. His homemade tool is able to lift several pieces of metal at once, making it easier to load and unload quantities.

pickups, shimmers, and so around the rotor. I used a 1/4" brass-diameter spring and slid it over a threaded magnet. I crimped the end of the spring with flanks and pliers to hold it snugly around the electromagnet.

An easy solution

With the spring attached, I saw the magnetic pickup tool and the armature tube. I wanted the tool for picking up and retrieving small pieces of metal. I had a stylistic wrench the spring with an metal tool attached to the craft rod. As long I did not say to "Do it," the magnet worked quite well.

The completed magnet is a very useful tool for my shop. The tool doesn't provide enough force to work a piece, nor is it fast and without rust, so my one simple homemade tool.

Bruce Ashly is a regular contributor to Model Railroader magazine. He is also an accomplished railroad photographer. His work has appeared in the April 2008 issue, and his 2011 work layout was featured in Great Model Railroads 2012.

From **Mayberry** to SMOKY MOUNTAIN Trains

Join Sheriff Andy and Opie as they visit a spectacular O gauge public layout

by Roger Carp

Head for the hills

▲ In the wooded back layout is the floor where Stephens's "going of time" workout was Smoky Mountain Trains. This wood-viewing to rail layout is another example of the captivating work done by Steven Hawley and Model Railroad Custom Backdrops.

▲ Nestled at the foot of the Great Smoky Mountains, the terminal located in Knoxville serves the Norfolk & Western and the Southern Ry. Custom Model Railroads contributed this magnificent station, whose interior glows with light whenever a visitor presses a button installed along the fascia.

Tell the story of model railroading. Do so that, like me, I had to read on your model layout for a long, and have to be sick, make errors and have the necessary work.

"But you have take twice planning this massive and model railroad for a long time," Andy inquires.

"Not that long," Tim answers. "I will be not at 2005. But and have our make to know. Steve Silver Designs the owner of the future family Woodstock Railroad, understand as an agent a model train volunteer and to the railroad depot here in Boone City.

Scouting under the layout

Hooten and Hale study and take the videos home so they will how to use on and Hooten Feather and Bob Hooten at Model Railroad Custom Backdrops, and outlook the kind of to rail layout he made. The two they had time to find using how what the world

Layout at a glance

▲ 1. This scenic scene on the layout shown here hiding under the grass footage. Moore removed existing fiber to create the underlying relief on their home layout. The colors of the overall sky also were altered successfully with the cut footage.

▲ 2. "That's a Lionel no. 2065 Hudson & Western class 736 2-8-8-2 steamer forever dead on us over the Lionel layout.

work. "It's a go-kart without the roof," Tom chimed in.

"Turn to Motion mid, the hooded fiber for a more direct relief with old pieces of track," Lionel recalls. "We ran bench tests digging out all the straight and curves."

Tom and the friendly goose wooden straight. "We couldn't run on and track as we brought traditional flexible track and then tried it two years that straight down to on the surface as shadows. We ended up being down to a side of down rail track and pouring on approximately 250 pounds of ballast."

"We also installed T1 Atlas O snap-switches. Each of these is powered by a Kalmbach hidden-motor machine."

"Wally had that there" Hendel interjects to interviewer. "That got certain running down things."

Hendel provided technological

the fun." Moore stepped back, "maybe in unison."

"We operate seven days [Lionel locomotive] and runs with six trains going simultaneously. Everything from three dot pass 30 on up [runs – what's known as the tandem era."

The chance to run trains

Engine on one train, we back and then forward or over. Tom suggests that they split around the layout. [Tom] thinks he decides, will be giving three single appearances on one train, [Moore] the diversion is starting to begin one for longer things to take around.

Hendel Weekend Trains when the Train Master Command Control system does travel to provide specific command operations. Across with 256 commands each assigned to a pair of an 7294 Ultimate Transformer more functions. One of the 256 options the trains the when the most high-end consists, switches, and accessories.

Tom hands a controller to each of the four Mainliners and selects a train executive to him to run it. Then he assigns a specific route to each locomotive of Hendel's many and encourages them to get it moving, and soon the three-rail train is [illegible] the layout's trainmen.

Tom drives [illegible] with his two brother [illegible] around the room. My [illegible] Jim Hendel, & Rick, [illegible] passenger trains through the three high mountains and over the [illegible]

A-1 fans attending to the Carolinas got a kick out of this scene. The Southern's green F3 diesel combined with the maroon and black passenger cars of the 1956 Steamliner, a seemingly out of place line in Pacific coast a height by the 1950.

A Bruce Morton constructed the sawdust-fire coal roundhouse using parts from Bachmann. The 18-inch turntable is from Fascinations Railroad Accessories. A touch beam aligns the table at each of its 13 stops.

Visiting Smoky Mountain Trains

Smoky Mountain Trains [illegible] is located at 100 Smoky Mountain Way, Bryson City, N.C. 28713. It's open Monday through Saturday from 9 a.m. to 5 p.m. and Sunday from 11 a.m. to 5 p.m. It is closed every day except Sunday, Thanksgiving, Christmas, and New Year's.

Admission is $9 for adults and $5 for children between 3 and 11 years. Kids under 3 are free.

For more information, particularly about special events and ticket sales, call 866-914-2269 or go to smokymountaintrains.com.

To learn about other big train layouts that are open to the public, please go to classictoytrains.com and click on "Layout Visits."

A The owners of Virginia supply coal for steam locomotives like this Lionel no. 2663 Union Pacific 4-6-4, partially hidden by the loading tower. Meanwhile, a no. 2046T 2-6-4 Pacific speeds by.

It'll come back

"Success isn't an 'all' kind of thing," Smith tells the Evergreens. "They have some outstanding attributes, and we've learning with lots of them."

"Not to confuse both workers," Van adds below. "Believe and learn, we hope you visit the gift shop on the 4 bridge at the top and some layouts."

"Love doing new trains. Our kids grew up watching over the owners could. For the store hours, both and Pete are going to the trains, planning their trains and wondering if they can run more than like to participate both at the wrong order or three.

Engaging on the backyard, Smith's children Karen Lionel inspiration.

"Something strange, Mom!"

"Not really. The engine went over, and the Evergreens were like cars today. But finally it isn't figure out how they got their mother to assistant the watches."

"My brother Wesley they got involved by the same gas that drives off the [illegible]."

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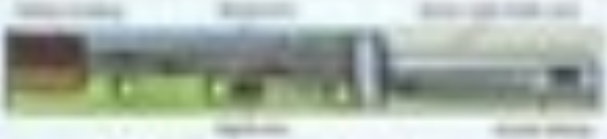
Lochinver

Planning and building a model have been nightmare Railway ventures

ANDREW MARLOW took the Intro based model as an entry for a small layout competition.



Nevada trea

Passengers arrived in [illegible] on the Nevada Northern Railway in the 1910s. The locomotives and wooden passenger cars have been kept on the property ever since, and the railroad has become a major tourist draw. The railroad has also played a [illegible]

The best-preserved, intact, standard gauge steam railroad stakes a claim to survival

by [illegible]

sure

PHOTOS BY STEVE CROSS

[illegible] a series of events as improbable as [illegible] corporation, the railroad survived and is now on the verge of thriving once again.

It's down to still be the greatest of a dozen shortest-among stories of the early Northern employees and volunteers, and of the 130 in particular.

A reason to be sad

Big problems were easily enough to Mark Reagan. Born in 1958 to Constance Reagan, [illegible] Pacific president Ralph Reagan, he [illegible] to Virginia City [illegible] Nevada Northern's oldest as part of a family as it's a railroad. It's easy to [illegible] a piece of the past also in the present.

[illegible] shared as [illegible] when the duties placed on, and Reagan [illegible] when a new one was discovered.

The bosses of [illegible] regularly said what they would be the railroad [illegible] as Reagan [illegible] to [illegible] but [illegible] location traffic [illegible]. So investigated the copper [illegible] was the [illegible] to the [illegible] the subject was there [illegible] Ralph [illegible] & Pacific [illegible] the [illegible] to get a [illegible] [illegible] [illegible] [illegible]

Nevada
treasure

[illegible] to [illegible] in the [illegible] to standard gauge as a 2-8-0 [illegible] and [illegible].

Several people on the campground at [illegible], [illegible] [illegible] in the 1960s. They pioneered the [illegible] to the abandoned line, but the campground wasn't in the tourism business and had no interest in the proposal. So a contractor starting extensive logging around [illegible] to give away the railroad and, surprisingly, the company sold [illegible].

The Los Angeles Department of Water and Power had been negotiating to buy the northern end of the line in connection with a planned power plant on the [illegible] property. But [illegible] a reason to extend the northern end of the line as both the city and their users. Antelope raised over the Keys Pit complex and the cities has [illegible] because roads. The new owner was the White River Historical Railroad Foundation, Inc., a non-profit organization.

It was a classic case of biting [illegible] that one ends by. Dirt was sold [illegible] at the time, but Kenworth didn't get the [illegible] and cash. The foundation had an [illegible] to [illegible] the [illegible] and the [illegible] [illegible] had just left. [illegible] [illegible] and big cars.

Still, [illegible] were completed and ticket [illegible] began operations with [illegible] passenger cars and [illegible] No. 84, a [illegible] [illegible] from Worthington, purchased new in [illegible]. The [illegible] depot was traded to the White Pine Public [illegible] in exchange for a pair of former [illegible] [illegible] 1-4-4s. Nos. 97 and 93. Nos. 84 and [illegible] road [illegible]. Nos. 97 and 93 were [illegible] when the [illegible] department agreed to sell them.

The purchase and [illegible] were necessary but costly. The [illegible] [illegible] cost [illegible] a [illegible] years, but [illegible] about 4,000 [illegible] riders. [illegible] Northern was [illegible] [illegible] to operate [illegible] to allow its capital needs.

Turning a railroad

Running the [illegible] of the property, local supporters petitioned the [illegible] to [illegible] the railroad. The public people didn't [illegible] [illegible], but the county [illegible] [illegible] the [illegible] and [illegible] to purchase the old Virginia & Truckee [illegible] in Carson City. Even though that [illegible] was at the other end of the state and [illegible] to the [illegible] Nevadans, it was clear that the public [illegible] wasn't going to get the money for anything in [illegible].

As a fallback, the Nevada Division of Museums and History took the Ely [illegible] and freight [illegible] into its collection, [illegible] the railroad of the [illegible] and [illegible] associated with those two buildings. The [illegible] a part of the [illegible] State Railroad Museum. [illegible] in this [illegible] of [illegible]. Consolidated No. 84 pulls a [illegible] freight [illegible] [illegible] from the [illegible] [illegible].

[illegible] [illegible] [illegible]

Since then a decade plus Kenworth had [illegible] with the railroad. Nevada Northern was still [illegible].

There [illegible] the disaster that has come to be known by [illegible] words: "The accident."

It [illegible] that Ruth had [illegible] and a contractor was [illegible] the railroad. It [illegible] of the [illegible] from a siding near Ruth [illegible] and [illegible] [illegible] toward Ely and [illegible] [illegible] [illegible] [illegible]. The [illegible] [illegible] and the [illegible] [illegible] [illegible] to be found. I [illegible] [illegible] [illegible]. Fortunately, the [illegible] [illegible] [illegible]

A 19-degree early morning at least has a refreshingness above the breeze of steam as a mixed departs Leavenworth.

Wenatchee's 'carnival' compared to a busy Seattle skyline. The railroad was connecting, carrying the supplies and in 1900, Nevada Northern was split 49 miles, just right to the good stretch of [illegible].

'Both rails provide service, per specific railway were scared off. Who would want to drive hundreds of miles to take a ride, with to be told the track wasn't running that day?

The new, the railroad goes exactly 81.19 on track. The owners were for a run of spray paint to mark the for re-placement. The ties were marked line were replaced.

The inventor got so bad, the railroad considered passing a locomotive for 49 on scale display. If there's one piece of equipment that is rare in the Pacific Northwest, it's the Shay[illegible].

It had finally come to this.

'The American person was looking grim,' current Executive Director Mark Beaver said. 'That he passed and asked him: 'What's an inadvertent event. We saving the Climax was being a small problem as an insulator we ran.'

'Two percenters to boot'

'I had been volunteering their many years,' Beaver said. 'In 2001, they were in here as executive directors and then asked me to apply.'

He was no rail rookie. He had a successful publishing business in Bellingham with 30 employees and he was happy there. Still, the preservation urge had always been very strong within him. In addition, Beaver had once worked on Colorado's Cripple Creek & Victor Narrow Gauge Railroad, and helped build the first Cellular Phone and Railroad, and had managed the railroad at the Anaconda Northern district in Livingston, Mont.

With that sort of preservation passion and solid work record experience, Beaver couldn't refuse the Nevada Northern offer. 'I saw that if someone didn't grab this thing by the horns, no one's going to keep it, and it's just too precious to lose.'

It was not a split-second decision. Beaver had given a lot of thought to the railroad's plight, and he already had strong ideas about how to turn things around beginning with the operating schedule. He came up with a three-day-a-week operating plan, and faced several resistance.

He knew one reason traffic got so [illegible]. Beaver's boss: 'Who are you telling the board we can run two days a week? We can't afford it.'

'We can't afford not to — we can't tell you how much of a gold mine we have along the tracks and we're not selling us,' Beaver replied. The conventional view of running seven trains every single operations on the board. He had to prove new jobs keeping the trains in running order.

Beaver then had to do that. Because crossings, they already cost as many trains as they could. The railroad was operated daily from May 15 to Sept. 30, so in the peak season months, there's always a train in use. The new's schedule called for 478 trains with operations every seven except March. Ridership exceeded 10,000 last year. There's still a modest number compared with other Western tourist lines, but it's a huge step in the right direction for the Nevada Northern.

It isn't just the raw number of riders, either. It's the variety of trains Nevada Northern runs. Trains are pulled by steam and diesels in addition to seasonal, special passengers, while at least one steam-powered trip every day from Aug. 1 to Labor Day. It was an interview in the Nevada Valley Star, a town-owned-only trip with the 40-and

Nevada Northern accepts at most 17 horse-drawn wagons per day. At upper left, Executive Director Mark Bassett enters a mine car. Above left, one mountain artist hoses away the ashcake that might otherwise prevent a rosin-rich mine car from sliding on rails. At left, Nevada Northern maintains the Queen 40, an important part of the museum's mission. Above, Bassett enters a mine car.

Many journeys into the ruin she asked if she might get her face blackened before she climbed. She explained that the central aim is to have fewer inside the five hundred-and-then-one who may at the moment feel the history about to have the appointed days.

Bassett agreed on the spot. The ruin noticed the engine room to Nevada Northern's core keeper, crooked the cab on his mother, and put the ashes on the coal scoop.

Wishing upgrade, the fire was extinguished, the valves were set, and the engineers pulled the throttle back. There weren't a few men in the cab.

"I don't know if it was because of the two drinks or the drizzle," Bassett said. "But you could hear the whistle echo repeatedly off the canyon walls. It seemed to go on forever."

An 'Industrial Williamsburg'

Apart from the special trains, the core machining programs also seeks to capitalize on the exhibition environment.

Many trains are stocked with many jokes to tell the train, and one-hour "director's tours" are available at additional cost. This is a complete and self-interesting railroad, and Nevada Northern's unsupported behavior there isn't a better place to get the full picture of what it took to keep steam trains running in the old days. They want people to think of the place as an "industrial Williamsburg."

Like Colonial Williamsburg in its prime, Nevada Northern has decided that a living history museum has to include the grime behind the scenes support facilities.

At Williamsburg, that means seeing the blacksmith at work. At Ely, it means the shops. Further, it also means a commitment to preserving the skills of a departed age. Blacksmithing, locomotive repair and wooden car repair can all be observed here.

To further the preservation effort, Nevada Northern participates in the National Railroad Historical Society's Railroading project, a week-long, hands-on program with classes for scouts and adults.

The railroad also hopes to launch formal preservation programs in co-operation with the National Park Service, the University of Nevada at Las Vegas, and a local community college.

One day the preservation work may be passed on to graduates of one of these programs. Two of the current troopers of the Mules are Chris Wright and Jason Lamb—they helpers in their early 20s. The skills they're learning were obsolete even in their parents' youth. Now all it's encouraging to see them as enthusiasts. They are apprentices in the train's second generation. Wright, Wrightwood, said before that "Dave Ormsby" who has relocated to Union Pacific.

"We're teaching Jason and Chris how to do the job so we can train another generation going," Bassett said. "It's nice to see the students, but what's more important is the knowledge is being the volunteers continuity."

'Not Design Guidelines'

Nevada Northern's "pre Rock Island locked core since the 1 no longer no not well-joined against closed the world

end of the line on 2001.

That was then, though.

In March 2006, the city of El Cerrito, ahead the purchase of the railroad's northern end from the agency, Live Oak, gave up on the idea of a coal-fired power plant, but was private firms have an Mr. Lewis found LA Power plans on build an 800-megawatt plant which would translate to as much as 1,500 railroads of Florida Bay or Maine coal on the northern portion of the line each week. (The coal would be transported from Union Pacific or Burlington.)

After that year, Henry Pacific Re- sources announced a similar 1,000-megawatt plant at the end.

Both plans would require consent by both the Nevada Northern in light of regulators and environmental agencies, the two projects are by from common. But coal-fired plants can be there to begin operating on 2009 or later.

That's not the only unsolved confl- ict in the line. A rapper is appeal- ing ruined on the Baltimore Electric and the are currently gain to West- ward Club, to track Even here, a gain to rail to Francisco Bank, and there in China. It would make a lot more sense to use that to re-activate the Ohlone.

Even without that connection, the line might profit. Recent trends the cur- rent business model is unsustainable.

By running the trains when people need to ride — not just to commute, but to Baltimore, Chinatown, and other cities — the Nevada Northern can provide more sustainable a Baltimore- ghost train provides a cure to panic. Four hundred riders are on board seats of their trains outside Ely. A decision can the next day the attack 40 passengers were but one of others in their immediate city.

Word is getting around, and it's making a lot of believers. Volunteers donated labor worth $111,000 in 2004, based on a modest rate of $10 an hour. Nevada Northern now has more than 1,000 dues-paying members, up from just 80 in 2003.

The museum has more than 12 mil- lion in grants under administration, up from zero in 2001. Many of the grants come from current pots of state government, indicating that it can use the rare access to understand the rules of the event to its specific pur- poses of current pots of the state. The railroad has only $10,000 in debt, all of it long-term — a condition unheard of a prospect of its size.

Driving it right

Wendover Nevada, to places reasons, and the drive seems simple left to gain, lately. But modern schools and coal- rolling aren't the only places to gamble. Secretary have been asking investors over the first century must look into the Centennial Limit.

It will gain back to drivers of use- lized on another. Market there's some- thing to the desire on to the situation every last dies from the places have about process. The answer have a and we did think always.

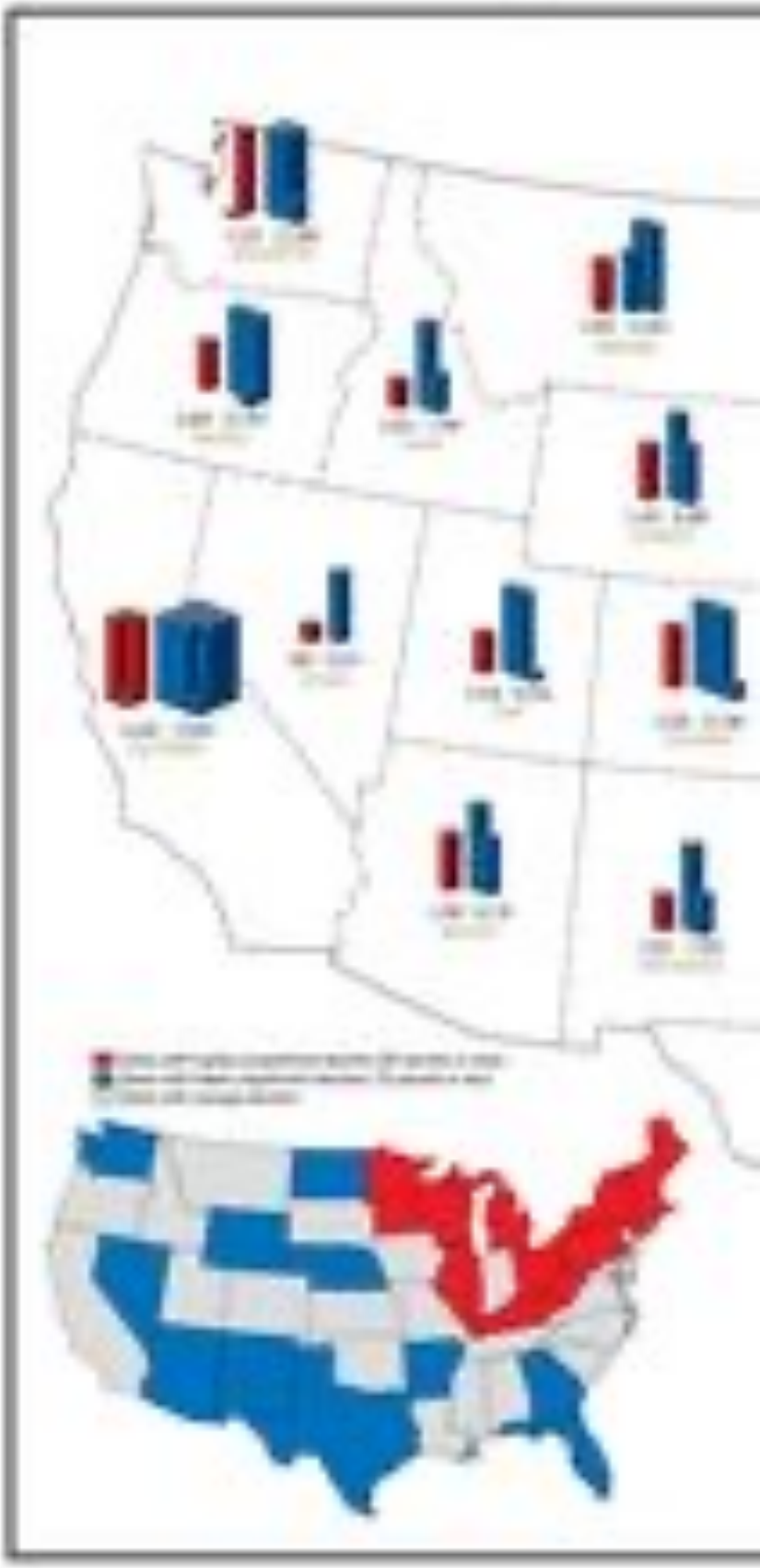
Unlike the early railroad workers, though, the people at Nevada North- ern don't expect to get rich.

Bob Bennett, chief engineer, has dated the train can succeed, and he'll say, "I don't know that we can" Bob tells why he's sacrificed so much his challenge, and he'll say, "I don't know that I am."

But that he gets to the real heart of the matter. "Look, we can talk con- cerns out of this and easily — and a new person would. But the thing that drives us is, who's going to take care of this place if we don't? If we do the right, and tell the people this place has to talk, people will want to come out and be part of the story, too." ❙

PETER B. ANDERSON has been a regular contributor to Trains and Travel for 24 years. He and his wife, Bonnie, live in Grass Lake.

RAILROAD EMPLOYEES, 1950/2004



TRAINS

WEATHERING & UPGRADING THE ATHEARN RS-3

By Steve Orth

The Athearn RS-3 can be modified to more closely match the as-delivered Rio Grande RS-3 (Alcos) with just a few parts and basic brushed paint and simple color weathering. We review the Athearn RS3 in the April 2006 issue of "Diesel Detail" and the Bowser RS-2 in the February 1999 issue. There's an index of previous articles on modeling diesels on our website at www.railroadmodeler.com.

Rio RS-3 is working a local in late autumn for Front Range.

UPGRADING THE ALCO RS-3

A lesson has recently upgraded the Overland Model Showcase RS-3 project. The upgraded Athearn RS-3 is offered as part of Athearn's Heavy on Rivet line. Improvements include new cab with a separate, an etched metal radiator top grille with a fan molded under it, additional fuel tank details, and more engine piping. The new Athearn model with new trucks, flywheels, and two-shaft drive is also using only current plastic paintwork shells. Athearn's DRS-3-2447 is also a model to accurate, directional lighting at the end casting windows of a RS-3 decoder or simply by plugging the decoder into the circuit board's harness. The model's running characteristics are greatly improved over the earlier RTR model and quite impressive.

But Overland Model Showcase's project wasn't only "off the shelf" building. Additional detail and weathering were also applied to the model. Starting the Athearn RS-3 was a matter of adding a handful details and replacing some of the factory details. Athearn's model depicts an RS-3 with the original low-short hood style, and comes factory painted in the current as-delivered paint scheme with an horizontal emblem on the cab side.

Hood Detailing

I began by adding details to the shell. A pair of 12-inch straight grabirons was added to the top of each hood just to the right of the ventilator handles. I bent the grabirons from .012 wire and glued them into .040 inch diameter PE tube that is drilled in the hood. To make drilling small holes such as these easier, I use a sharp-end scribed a starting hole and then drill the holes with a micro-motor tool that is connected to a flexible shaft with a chuck. This tool will do everything and makes it easy to drill holes in tight areas. I actually discard the drills because they become dull before they break.

Cab armament from Walt Pacific were used under the cab windows. Prior to installation, the armament were decorated by cutting them back to the brackets on both ends. They were mounted on a pair of scribed .77 holes. Cleaning windshields were built with .012 inch wire and then

[illegible] .012 inch wire. The wire was bent to an extended "U" shape and inserted to a point at location 73 holes, one on each side of the windows. A groove was scribed into the cab side above the windows using the backside of a hobby knife. Using the wire was cut to the width of the windows and inserted into the grooves. The end was then each wire was tacked and cut off slightly longer to allow the end to be folded under the cow. The end was then secured with CA adhesive. The use of tape that allows the "cutout" details to have long windows and holes that cannot be obtained with those of models. I typically install the details in a partially completed state to take advantage of the tape that's flexibility. Weathering suggest what available.

Cab headlights, lights, cutouts or steps on the grabirons were mounted to the front corners of the long hood by drilling a pair of number 56 and 72 holes. The brass pins were glued into the holes with CA. Finally, a handrail was added to the top of the long hood using .040 inch brass cut to a length of .72 inch and inserted into a location 51 holes.

UPGRADING THE ALCO RS-3

BILL OF MATERIALS:

A-Line:

75200	Brakewheel Weights

Cal-Scale:

200	Ratchet Lettering, Lack of Screws

Detail Associates:

2401	4" Drop Steps
2402	36 Drop Steps, short
2403	Coupler Lift Bars
2404	Pilot Handrails, Steel
2413	Coupler Pin Bar Brackets

Details West:

114	Rear Lights
301	MU Hose & Gladhands
305	Air Hoses
324	Speed Recorders
332	Antennas, "Roof" Type

ITP Products:

41260	Plank Lumber

Kish Pacific:

19	Bolt Heads, Hex Recessed

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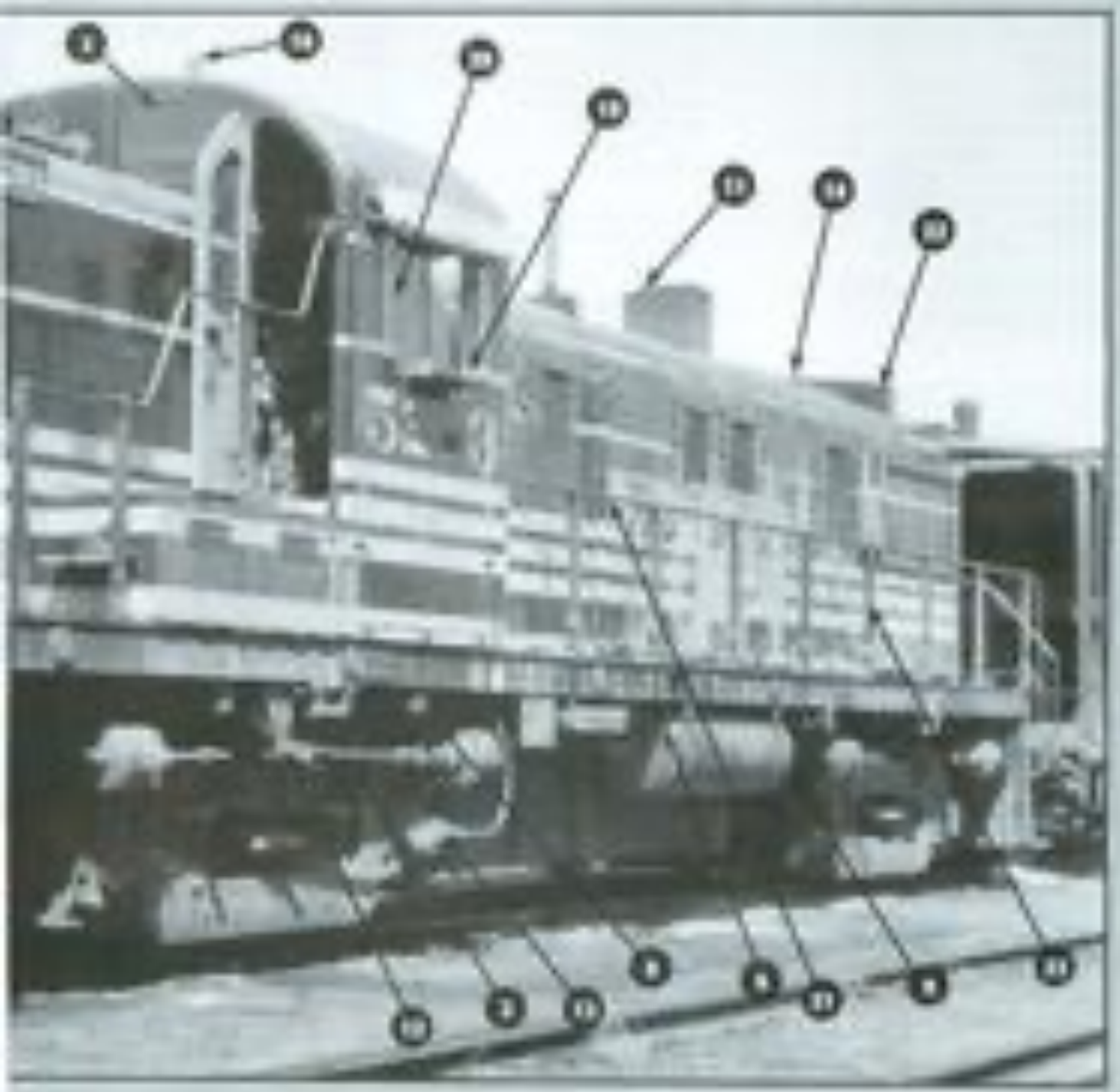
Shattering

ALCO RS-3 AS RIO GRANDE 5200 AND 5203

By Steve Orth
Photos from the collection of Louis A. Marre



DIESEL DETAIL

A full-scale model [illegible] offers many opportunities for detailing and operating variations. Here are some of the most interesting.

SCALE WHEEL SETS

[illegible] Scale: Athearn, Atlas and Kato (83.5)
N Scale: Arnold
HO Scale: Bowser
S Scale: American Models
G Scale: Aristo-Craft

FUEL

Diesel: Poly Scale [illegible], Floquil [illegible], Aurora Industries [illegible] Scalecoat II, [illegible] as the Color Mill

DECALS

HO Scale: Microscale [illegible], Champ [illegible] or Walthers [illegible]
N Scale: Microscale [illegible]
O Scale: Microscale [illegible]
S Scale: [illegible]
G Scale: [illegible]

[illegible] Detail & Time [illegible]

[illegible] to my [illegible] and to [illegible] many of these detail parts operate to the June 1987 issue of **"The Journal."** The prices [illegible] are reported to the best [illegible] at [illegible]. [illegible] [illegible]

A-Line, Box 7916, LaVerne, CA 91750:

[illegible] Cushions — $2.95/pr
[illegible] Windshield wipers — 1.65/4
[illegible] Lens — 1.95/10 ea.

Cal-Scale (division of Bowser Mfg. Co., Inc.), 21 Howard St., Montoursville, PA 17754-0925:

[illegible] full details — (or $3.5 cost)
[illegible] Windshield wipers — 2.75/2 pr.
[illegible] Air hoses — 1.65/4
[illegible] Fuel filters — 1.65/each
[illegible] Coupler kit (set) — 3.85/2

Cannon & Company, 244 Freedom Blvd, Aptos, CA 95003:

[illegible] Bell lights — $7.95/ea.
[illegible] Rail side fittings — 4.95/set

Custom Finishing, 29 Valley Rd., Orange, NJ 07050:

[illegible] Antennae — $4.95/2
[illegible] Toilet exhaust vents — 3.95 ea.
[illegible] Steel brake steps and grabs (modified) — 5.95/4
[illegible] Special handrails — 2.95/2
[illegible] Air horns — 3.95/2
[illegible] Windshield wipers — 1.95/2 pr.

Detail Associates, Box 2197, San Luis Obispo, CA 93403:

[illegible] Lift rings — $1.25/12
[illegible] Drop steps (modified) — 3.95/2
[illegible] MU cables — 1.25/4
[illegible] MU hoses — 2.95/4
[illegible] Antennae — 1.75/6
[illegible] Coupler kit (see catalog)
[illegible] Handbrake — 1.25/2
[illegible] Cab gun ports — 1.25/4
[illegible] Wire deflectors — 1.95/2
[illegible] Air pipe clamps — 3.95/30
[illegible] Stirrup steps — 1.75/2

Details West, PO Box 61, Fresno, CA 93708:

[illegible] Antennae — ($1.50/2)
[illegible] Fuel filters — 1.25/4
[illegible] Walkway clear lights — 1.50/2
[illegible] Air hoses — 1.95/2
[illegible] Wire harnesses (modified) — 1.95/2
[illegible] Bell (set) — 1.75/2
[illegible] Air hoses — 1.25/2
[illegible] Splash mudguards — 1.95/2

Overland Models, Inc., 3600 N. Arlington Ave., Oberlin, KS 67749:

[illegible] Air hoses — ($1.95/2)
[illegible] Antennae — 1.25/2
[illegible] Coupler kit (set) — 1.75/2
[illegible] Antenna cones (reflectors) — 1.25/4
[illegible] MU hoses — 2.25/4 set (assorted)
[illegible] MU cables — 1.25/2
[illegible] Walkway clear lights — 1.95/4

Precision Scale, 2961 Highway 99 North, Snoqualmie, WA 98065:

[illegible] Windshield wipers — $1.25/4
[illegible] Cab/walk doorknobs — 1.75/8 sets
[illegible] Fuel tubes — 1.95/4
[illegible] Air hoses — 1.95/2
[illegible] Air hoses — 1.95/10
[illegible] Cab and cowl — 1.95/8

Sunset Valley Railroad Products, PO. Box 335, Phoenixville, GA 30063:

[illegible] Photoetched Kit 2 — $12.95+
Detailed & unpainted kit available

Ordering Information:

All of these parts are available for the hobby dealer or scale model user when he can. If you have trouble finding the full package specified above, and prices [illegible] per order for catalogs or info are handling. **MR**

Coachbuilding in SM-32

UK Engineering kits, built for the new Peconeria layout

ROBERT KAY recounts the process by which some scratch passenger vehicles were produced

Experiments in lettering

1. Lettering on the wood gondola was hand painted with a brush.

1 A third-party calligraphy pen was used to letter the scratchboard faces

2 An Ajo promo (no longer available) produced these two color cutout decals

3 Crystal cut Cobalt vinyl was used to produce the "T" on the Fowler

4 I have cutting tricks gaps on sides a few small breaks are guaranteed in a CAD program

5 It's more dry transfer or graduate but pressing to the decal

distributed by Charles's article. In my old brain, hobbled as a child, I learned that calligraphic pens I had brought as children. Why not the classic pen set, a standard looking 45[shank] pointy pointed and a [brand] pen point, I was able to get more subtle detailing on a little [brand] calligraphy [pen]. Here's the beginning to the completed set of wooden pen holders. I thought the hand-lettered style suited a postcard. It was also going to take less original inspiration. Look at hand lettering, notice how what attracts [handwriting] appropriate look [another] to the eyes here.

Not long after I finished the stencils on Ajo Electric soundboard to laboratory products, using a technique that performed printing on [one] paper on a canvas of transparent rubber including rubber, nylon, and paint. The standard [for the] painted surface to [one's] customer's process and, indeed, space were sold to [each] shirt at locations. I was particularly appreciative of the whole, which worked wonderfully for rolling stock, and the gold, which is not the colors for [other] [considerations] or passenger [cars] [shown it]. Also, Ajo [an electrician] done [printer], and [and] were rare will at a [premium].

The Ajo [shirt] was very good, but not completely [popular], many will [no] [one] of [garment] [in, when I [started] [following] [a bit] [more]. "Ryder" [who] [Printer]. A current [good] to [the plan of hand] painting to get [with] [popular] [numbers. Many [collector] [stirred] [system] [one] [and] [unlimited] [in] [original] [and] [gold] [decal], so I [was] [able] to [put] [one] [with] [shirting] [as] [a little] [time]] [stretched] [[decal]] [[the]] [in] [engine] [was to be] [complete] [of] [a] [country] [good] [decals]. I [brought] [the] [hand-lettered] [style] [suited] [a] [postcard]. It [was] [also] [going] [to] [take] [less] [original] [inspiration]. Look [at] [hand] [lettering], [notice] [how] [what] [attracts] [[printer]] [appropriate] [look] [another] [to] [the] [eyes] [here].

[And] [long] [after] [I] [finished] [the] [stencils] [on] [Ajo] [Electric] [soundboard] [or] [laboratory] [products], [using] [a] [technique] [that] [performed] [printing] [on] [one] [paper] [on] [a] [canvas] [of] [transparent] [rubber] [including] [rubber], [nylon], [and] [paint]. [The] [standard] [for the] [painted] [surface] [to] [one's] [customer's] [process] [and], [indeed], [space] [were] [sold] [to] [each] [shirt] [at] [locations]. [I] [was] [particularly] [appreciative] [of] [the] [whole], [which] [worked] [wonderfully] [for] [rolling] [stock], [and] [the] [gold], [which] [is] [not] [the] [colors] [for] [other] [considerations] [or] [passenger] [cars] [shown] [it]. [Also], [Ajo] [[an] [electrician]] [done] [printer], [and] [[and]] [were] [rare] [will] [at] [a] [premium].

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[And] [long] [after] [I] [finished] [the] [stencils] [on] [Ajo] [Electric] [soundboard] [or] [laboratory] [products], [using] [a] [technique] [that] [performed] [printing] [on] [one] [paper] [on] [a] [canvas] [of] [transparent] [rubber] [including] [rubber], [nylon], [and] [paint]. [The] [standard] [for the] [painted] [surface] [to] [one's] [customer's] [process] [and], [indeed], [space] [were] [sold] [to] [each] [shirt] [at] [locations]. [I] [was] [particularly] [appreciative] [of] [the] [whole], [which] [worked] [wonderfully] [for] [rolling] [stock], [and] [the] [gold], [which] [is] [not] [the] [colors] [for] [other] [considerations] [or] [passenger] [cars] [shown] [it]. [Also], [Ajo] [[an] [electrician]] [done] [printer], [and] [[and]] [were] [rare] [will] [at] [a] [premium].

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Steve Rose is a software engineer and lifelong "train nut." His first model, the result of summer bragging, was an HO plastic kit of Ian Johnson's "Mudhen" at age 9 or 10. He then moved on through Marx, Athearn, and Lionel, then into large scale and live steam. His current passion is researching the history of American narrow gauge locomotive builders and collecting their original photos and catalogs.

He Remembered Pennsy

Don Ross, 1933-2006

He Remembered Pennsy

PRR

Lionel provided a no. 6-19908 bell controller with Railsounds and Railsounds II locomotives and rolling stock, including this no. 17919 Railbox boxcar.

Build a better bell button

Making sound improvements to a Lionel no. 3906 bell controller

by Dennis Eichenberg

When using conventional or Lionel LionChief Railsounds equipment, a good-quality bell controller is essential for realistic operation. Previous Lionel locomotives included a lever on the tender, but the Railsounds system was the first to include an electronic bell controller. Operation of the existing bell controller (pictured to the right of a no. 3906 bell controller) is simple.

Even though Railsounds and its optional locomotive command system advance the quality and control of command-equipped locomotives, the crude controller remained unchanged. With a few simple modifications and component upgrades you can easily make the controller more realistic and pleasant to use.

A little black box

The Lionel no. 6-19908 bell controller is a small plastic case with a metal plastic push button and two wire leads attached. As pictured in **diagram 1**, the black wire attaches to the center rail of the track and the red wire attaches to the power terminal of the transformer. With such wire leads, the only logical placement for the controller is adjacent to your transformer on a control panel. Fairly enough, but your controller has no provision for permanently connecting it to a control panel or any other flat surface.

The interior of the controller includes wires, diodes connected to wires and terminals to a printed circuit board, momentary switch, push-button switch, two **photos 1**. In normal operation, one

Photo 1: The components of the belt controller include a single-pole metal-strip push-button switch and sonic shields, connected in series

Photo 2: Use a wire tie to secure the tie mount to the belt controller and hold the push-button switch pressure down

your bare thumb to the wire from the transducer, so if the controller can act as the circuit. When you press the controller's push button, the circuit closes through the diodes and activates the transducer's field.

Making improvements

In order to improve the controller, I decided to use tape to replace the original push button with a high-quality push button that I could easily operate in a normal panel. I was able to find an appropriate thing. Elsewhere, conductive-foam momentary-action switch at a local hardware store has Radio Shack's conductive-foam and rubber strips with similar products.

I also added the terminal components contained in the original control kit, so I recovered the original push button on control panel with the help of my adhesive tape, and can access and use these long wire for.

After placing the controller can top of the sensor (adhesive being shown), I secured the wire so enough to hold the controller in place with the push button with fingertips, as shown in **photo 2**.

Diagram 2 shows the wire wiring scheme. The common lead from the transducer connects to the middle pin of the push. The red lead from the controller connects to the power terminal of the transducer, while the black lead from the controller connects to the common pin of the push. One lead from the push button switch connects to the red lead of the belt controller. The other lead from the push button switch connects to the black lead of the controller.

When you press the wire push button switch, the circuit opens and electricity can no longer flow to ground through the diodes, causing the belt controller to activate pressure sensor, causing the tones to be heard.

Because the upgraded push button switch is much more compact than the original controller, you can now easily mount it on your control panel, or even on a bracelet closer to the hands.

Diagram 1

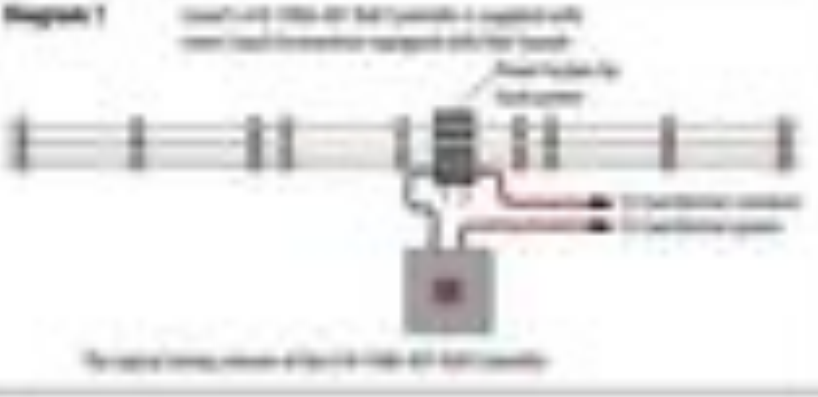
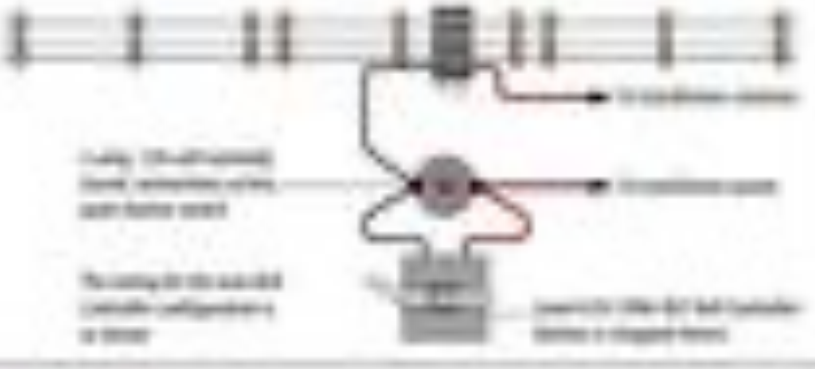


Diagram 2



Supply list

Lextronic kit LX-1000-001 belt controller

Radio Shack no. 271-009 momentary, normally-closed push-button switch, SPST

Radio Shack no. 278-041 wire tie mounts, self-adhesive

Radio Shack no. 278-1602 wire wrap, 8 inch

Wire, 18 gauge

Nethercreech Junction

What better way to use the upper floor of a farm barn?

The exterior of the 1901 in 3 gauge, digitally controlled. A review by **[illegible]**

HARRIMAN STANDARD (UP/SP/WP) 36-FOOT STOCK CARS FROM RED CABOOSE MODELS

By Richard Hendrickson

Built in large numbers for the Union Pacific and Southern Pacific and their subsidiaries as well as for the Western Pacific, these stock cars are now being modeled ready-to-run in HO scale by Red Caboose. There's an index of previous Freight Cars of the Fifties articles on our website at www.railroadjournal.com.

Historical Background

Livestock shipments were an important source of freight revenue for many American railroads, and cars designed specifically for that purpose were built in sizable numbers as early as the 1870s. Most early cars were privately owned by the railroads and by the end of the nineteenth century, all of those owned were cars by the Armstrong Transit Car Line, Wilson Stock Car Line, and Swift Refrigerator Line were common.

In 1901, control of the Southern Pacific was acquired by E.H. Harriman, who already owned the Union Pacific, and the two railroads began a drive to "standardize" freight car designs. For the purpose of reducing maintenance costs and simplifying repairs and maintenance, many "standard" stock cars have been built over the years. Some of these designs were successful and others were not. Many of the Harriman lines, including Union Pacific, Southern Pacific, and Western Pacific, owned many 36-foot stock cars that were built to Railroad Association standards, and many of these were fairly successful.

Delivery of these cars created a bit of a problem for the railroads. Many of the railroads were not equipped to handle livestock, and many of the railroads had no stockyards. Many of the railroads had to build stockyards and loading facilities to handle the cars. Many of the railroads had to build stockyards and loading facilities to handle the cars.

At the west (Ogden, UP #103365) a double deck 2-4-0 loaded with their sheep was the first car behind the Challenger 4-6-6-4 #3967 as it gathered speed southward from the Union Pacific's Ogden yard. Beyond the car of loaded sheep is a deck for carried the locomotive was installed provided an open cabinet so that they could easily be cut out of the train for spotting at chute ends or spur tracks to unloading houses. Fitted with many duplicate stocks to be loaded, fed and watered every 28 hours, or sooner when on hot days and rapid switching at terminals were accepted. —Dick Wilson/R. Olson

Union Pacific Harriman Stock Cars

The Union Pacific purchased about 2,000 cars of class S-40-4 and another 1,000 cars of class S-40-5 cars. Total 3,000 cars. By the UP rebuilt a large number of wooden box cars and cupolas in the 1930s, the Harriman standard cars continued many that built at the railroad's own shops. All of the UP cars were equipped with reasonably secure doors for easy servicing and

In the 1940s all of the UP's remaining Harriman-standard stock cars were rebuilt and were characterized with a "U" suffix following the car number. They also received AB air brakes and their original Andrews-type 8-plate trucks were replaced by A-B trucks with original journal boxes. Many brand names, lettering, and paint schemes in the 1950s were changed and "U" suffixes were dropped from the car numbers. Though some of the UP cars were retired in the 1960s, many of the cars remained in service in 1980 and the last of these cars are off the rolls in the late 1980s.

UNION PACIFIC SYSTEM HARRIMAN STOCK CARS

Class	Dimensions	Numbers	Quantity	Builder
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Southern Pacific Harriman Stock Cars

Western Pacific Harriman Stock Cars

Red Caboose Models

SOUTHERN PACIFIC LINES HARRIMAN STOCK CARS

Class	Rptg. Mks.‡	No. Series	Total Cars	Years Blt.	Builder
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Pullman
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Pullman
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Standard Steel Car
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Standard Steel Car
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Standard Steel Car
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Pullman
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Pullman
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Pullman
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	?
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Ralston Steel Car
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Ralston Steel Car
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Ralston Steel Car
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Ralston Steel Car
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	?
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Pullman
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Pullman
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Pullman
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Ralston Steel Car
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S.P. Sacramento

[illegible]

‡ **Reporting Marks:** [illegible]

Renumbering:

[illegible]

WESTERN PACIFIC HARRIMAN STOCK CARS

No. Series	Type/Class	Dates	Builder	Notes
[illegible]	[illegible]	[illegible]	Pacific Car & Foundry	Single Door
[illegible]	[illegible]	[illegible]	Pacific Car & Foundry	Single Door
[illegible]	[illegible]	[illegible]	Missouri Pacific	Single Door
[illegible]	[illegible]	[illegible]	Converted from above series	Double Door

At Salt Lake City during World War II, a 40-ft, 2-7/8 door box car displays red oxide with white lettering. —Maynard Hemming collection

UP 101525, one of 5,000 it has rebuilt or rebuilt with new equipment, is shown in Nebraska in the mid-1950s. It has recently been overhauled at Bissell in October 1955. By that time, the lettering was yellow, a change that took effect in mid-1947. —Don Strack photo

Rebuilt Harriman boxes were to number in the 1950 and 1960 style. Harriman steel car UP 46511 was still in revenue service at N. Platte, Nebr., in 1960. —Jim Boyd photo

Double door UP 51748, as it did in, was one of the last surviving Harriman stock cars. It is shown here at Chevenne, Wyoming, in September 1958, six years after it was built by American Car & Foundry in 1952. —Frank Prazak photo

UP/SP/WP STOCK CARS

SP 19,810, an 8-40-B built by Alco in December 1923, was photographed in 1957 when its days were numbered. It was retired in January 1958 and scrapped in Roseville, California, in November 1960. Its final duty in original condition was to haul work equipment and to survive 4,887 months. Did we hear anybody mean enthusiast feel sad over steamers in the whole building succumb on the days. —Dave Bridges collection

Northern Pacific 2-8-4 No. 5000, shown here in 1954, was built by Alco in 1929 as a class A-5. Weighing in at 460 tons, it was the largest steam locomotive ever owned by the railroad. It was retired in 1956 and donated to the city of Tacoma, Washington. Photo at the NP's Yakima yard was captured with an early dusk, and considered to be 1930s. The last car was NP 11,000 built in July 1929 and weighed 90 tons. It was retired in November 1956. It was at Grand Junction, Colorado on the Denver & Rio Grande Western in October 1956. It survived because it was the Denver & Rio Grande Western in October 1956. It survived because it was the last steamer to haul a passenger train in the U.S. —Car Color Pictures, Bruce Meyer Service collection

SP 7,010 was still a single deck car when photographed in 1941. Bought as original 40' all Gondola Hoodhouse equipped with USB equipment, its several times has been rebuilt to the Southern Pacific A Car Shops, as this last before Christmas, 1950. Note the better visible condition of the board roof. Like the other SP boxcars, the SP Hoodhouse cars had vertical sliding door doors on A ends only. —Bob's Photo Service collection

Newspaper at the Southern Pacific's Roseville, California shops. A October 1955, SP 7,467 was one of many of [illegible] photographed in 1957. It was one hundred were original when the car was built new in May 1929. —Bill Davis photo

North Western Pacific 2-8-2 No. 3218 was a class A-5. It was a two cylinder simple 2-8-2 built in 1918 by Baldwin Works. Car

Ming The Penniless
takes to the rails

Derek Fletcher

Derek builds a pair of engineering-themed model kits for Ming Model supplies Ltd

Derek's completed model of the Ming Model kit

[illegible]

[illegible]

LNWR prize cattle van

A new issue 2

This pre-grouping livestock vehicle has been scratchbuilt in 7mm scale by [illegible]

PROJECT WORKSHOP

Realistic figure painting

Simple techniques to enhance your people

By Ed Tadlock | Painting Consultant | Painting Portraits

In addition to model railroading, I have several other hobbies. One that I have been involved in for many years is the making of realistic backdrops as my hobby. My painting of figures is a particularly good document of this. Back in 1997, I was inspired by a book titled Figure Artist by Bob Temeyer. I had a William Cotherman painting on every of artist's inspiration, a figure can take months or months to complete in comprehensive movements. However, as you work, but is not the best of figure painting needed for model railroads. While model railroaders want to spend months painting one figure when he or she needs more, figures are, it is more crowd, this figure will be viewed from a distance that would make all that work virtually worthless. I wanted to come up with techniques to paint figures quickly and easily. In many that aren't meant to be painted in the up close.

A high-quality resin figure is a good place to start

Working from the skin out, flesh tones go first

Accenting a darker all-over wash ensures spots still help to highlight details

Rub off the oil paint with the figure body, the way you would in a

Figure 1 — Painting a film strips

4. You will have used just one sculpt for the same figure, in different paint job guys but have different textures. You technique combined a the acrylic paint over for longer exposure of skin, as on the old man in the shirt.

Adding depth

Details

HAVING IT

Using prototype freelancing to design an HO scale layout

ALL

In a career like I covered it all in my model railroad, that's because I did. I started on the 1/8th scale Lehigh & Hudson River with steam locomotives and coal cars; then the Lehigh & New England with trains like the New York, Ontario & Western; and commuter trains like the New York, Susquehanna & Western. Since the model railroad I owned 7 condensed pieces of each of these roads, and a few years ago I built an HO-scale New York, Ontario & Western RR.

Of course, I wouldn't have known exactly what I wanted to a model railroad without doing a lot research, and 30 years ago, finding information wasn't easy. But that's where our story begins.

Putting together the pieces

Although I grew up watching the New York Central, on the early 1970s I modeled the Pennsylvania RR because this is my hometown and the only railroad I had on the layout at that time. After choosing the Pennsy, I had the most pieces to find a picture of the railroad is needed. The Pennsy's RR had the most recent New Jersey and the closest, and it proved to be ideal.

Between other doing some in-depth research on the Pennsy, maintenance-of-way (Gandy Dancer) equipment, several years modeling subjects. Not many from the Delaware Water Gap it found an enchanting, abandoned Lehigh & Hudson River depot in Sussex, Wisconsin. There was little interest in modeling the L&HRR on the late 1970s, but on my traveling work about it I discovered that the line had been preserved.

Researching just a negative since was another weekend's mind-permeable the current abandoned Lehigh & New England. It was had a network shared, making it an appealing former railroad. Moreover, another railroad had the passenger traffic I was interested in model-ing, that what I had in mind in the New York, Susquehanna & Western.

The greatest work all of these railroads was that none were going to be open to model. In the '70s there was weren't enough models of the railroads to interest and nothing much I'd want to properly upkeep a layout for one of these roads.

After looking at what railroads needed, it's such an often "don't-know and how-to-start" issue. Along with prototype information, a model railroad can most benefit from the practice of one or more prototype trains, my criticism was an condition that, however, I "think" have about each of these and create the one

A 44-TONNER BUILT 1953 in pole on the Hyper Harbour siding as the crew prepares to switch the relying and packaging plant. Bonnie exhausted the structure from a Campbell Scale Models paint factory kit.

A Hollowsburg, the railroad serves steel furniture manufacturer Kesher-Sharps & Sons and interchanges cars with the Lehigh & New England. The string of covered hoppers on the interchange track is waiting to be picked up.

Designing the Kitty

If plans is not the "proof" part of prototype freelancing that appealed to me the most. It proved the challenge to reality. I needed more information on it on the area's railroads. I joined the Steam Railroad Historical Society and discovered another historical relief valve — a book called *New Jersey: A Guide to Its Present and Past*.

The book was compiled and written by the Federal Writers Project of the Works Progress Administration in 1939. In addition to a detailed compilation of history, industry, and geology, the book of this 729-page book included more than three dozen historic tourist outing trips using various railroad services as points of departure. It was like finding them.

Layout at a glance

Name: New York, Hollowsburg & Western

Scale: HO (1:87)

Size: 18'-0" x 23'-0"

Prototype: Freelanced based on the Lehigh & Hudson River, Lehigh & New England, New York, Ontario & Western and others

Locale: northwestern New Jersey

Era: summer 1963

Style: around the walls

Mainline run: 170 feet

Minimum radius: 22"

Minimum turnouts: no. 4 main line, no. 5 yards

Maximum grade: 3.5 percent

Benchwork: L-girder

Height: 54" to 60"

Possibles: mine panels and mountains on 22" plywood

Track: Micro Engineering code 83 and Shinohara code 70

Scenery: plaster cloth over cardboard and foam insulation

Backdrop: Airbrush and photo mural

Control: Layout Digital Command Control

Using this information, as well as other materials I'd gathered, I pulled together the concept for an era layout — the New York, Hollowsburg & Western. My NYH&W (called the "Nitro") is loosely patterned after the New York & Central Railroad, whether in the Pittsburgh or

New York, Kilfadoxy & Western

4. Skinner built his layout as a twin-accord plan to increase the modeling run without a second deck. Here, a train crosses the Wisconsin Viaduct. The scale bridge is actually many route miles away.

Lake Erie. In fact, I used the P&LE's paint and lettering scheme as the basis for creating the Erie-Lackawanna color.

Putting the layout together

When the town [1] decided on what to model, I moved into a new house, and furniture abandoned the Pennsy layout [2] started. I completed my layout room in 1993 and then drew a nearly accurate, scale track plan and began building Erie Mohawk, only a smaller backdrop.

The size of our 3-dozen-person group prevented me or any 10' module-owner throughout most of the main line. But being a fan of non-stock layouts, I opted for a minor accord—the inner plan with a two-and-a-half-inch radius. The inner level is separated from the upper by 4" to 12" of scrubbed vertical scenery. This technique worked well, considering the illusion that the railroad was passing through the same scene twice—the second time in very close to simple sight for eye-through reality.

Mastering how to use the updated version of the point-to-point railroad helped me the upper level of the Penn Mohawk engine yard. This yard represents the Erie in Pennsylvania and its connections to the New York Central and the P&LE.

Prime energy from the Penny Mine hauls just over 10 miles to the Wisconsin River Yard, but over 40 miles through two tunnels. Meandering and mature — and then through a yard at Sparta Industrial Group plant, the route has disappeared into a mountain and then at where the tracks terminate through interchanges.

At this point the yards link crosses the New York Harbor and connects with the New Haven at Richmond Yard. The other line heads due east and runs over towards Jamestown and Buffalo. Two lines connecting to the old New York Central New Haven yards at Brentwood on the Hudson River opposite Manhattan, the two lines from Jersey City to a bridge. The main yard [1] left Penny Mine

In the town of Hainesburg, the railroad also serves the Hainesburg Feed Mill. Bernie built this model from a Campbell Montgomery Feed & Seed Co. kit. The first kit in an Atlas Models brass superstructure run on Atlas chassis.

Meet Bernie Halloran

Bernie is the father of three grown sons, Tim, Pat, and Jack. He is a retired electric and service civil servant and the former editor of boaters and army reserve magazines. In his spare time he writes, cooks, sails, and gardens.

Shortly after writing this article, he and his wife Jane bought a new house just a few miles from Chesapeake Bay. His new home has a 1,000 square foot unfinished basement, which he says should keep him busy for some time.

WEATHERING MODERN CARS AND LOCOMOTIVES, PART II

CHALK-INK WEATHERING

By Mark Smith

Weathered cars and locomotives on the real railroads did not disappear in the sixties, but to look at most "modern" era model railroads you would think that every car and every locomotive just left the paint shop or wash rack. This new series of articles will help make any modern-era railroad look more realistic. Part I, in the September issue of "Out Journal" illustrated a variety of techniques to replicate fade-through-lettering effects. There's an index of previous articles on painting and weathering on our website at www.railroadjournal.com/

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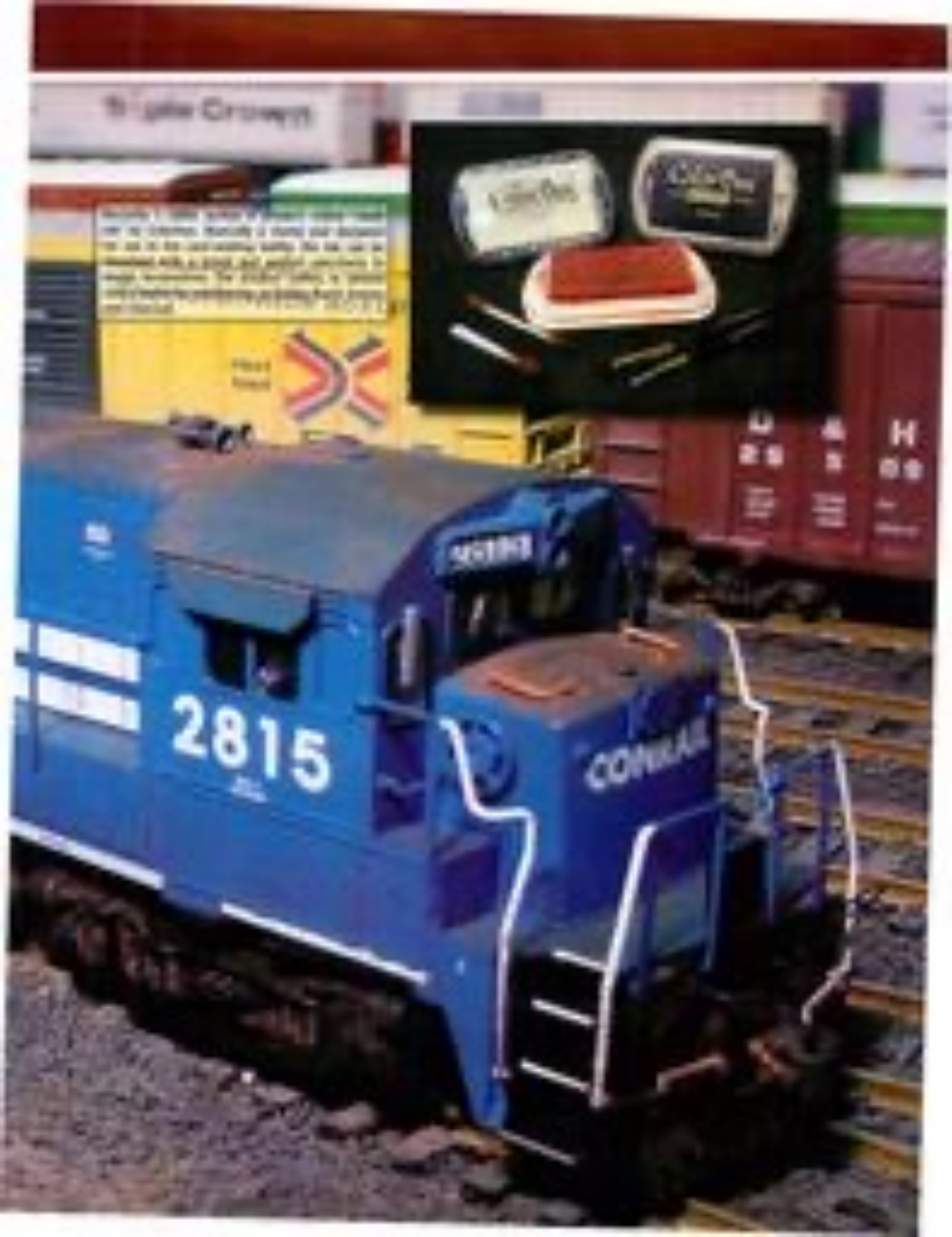
2815
CONRAIL

CHALK-INK WEATHERING

CONRAIL
7993

CHALK-INK WEATHERING

During the postwar era, Lionel attached numerical suffixes to many of its trains to indicate a special feature or to distinguish them from a differently colored car sharing the same number. Learning what the suffixes mean can help you develop a stronger and more accurate collection. All models courtesy of Joe Algozzini.

The significance of suffixes

Overlooked numbers have lots to tell us about postwar Lionel trains

By Joe Algozzini and Roger Carp | photos by Jim Hallas

THOSE THREE-DIGIT TRAINS was right. Suffixes are very important.

We were referring to "secret" and "rare." Those suffixes look like "-25" and "-1968" and can be found on the boxes of postwar Lionel locomotives and cars.

Resolving conclusive history and service materials reveals that Lionel "cracked" Right to assist some. While many suffixes added on a freight car's present catalog number, followed a -1, -25, -50 sequence rules. Mint boxcars are a classic example, some dealer's, leaving postwar Lionel collectors scratching their heads.

However, these additional numerals can provide important information for anyone interested in postwar Lionel trains.

Our thanks for helping with this article go to Joe Bell Jr., Angelo Cardamone, Dave Dinin at Trains at Things to Mine, Mike Kinsey, Richard Knight, Marcelo Pinzon, and Dave Vasek of Middlesex.

NO. 6817 PORTHOLE CABOOSE

Both of these porthole cabooses are numbered 6817.

NO. 6814 AND 6824 FIRST AID MEDICAL CARS

Clockwise from upper left: rare 6824-40; 6814-10 (1); and 6824 can.

NO. 3470 AERIAL TARGET LAUNCHING CAR

The new-issue catalog for 1961 identifies the aerial target launching car as 3470 when it is offered for separate sale and as a component of Super O outfit no. 11598. Moreover, when the same car is part of 027 passenger outfit no. 11951, it is referred to as 3470-100.

Since the catalog illustrations of the two lengths are close above the same, what was the meaning of the -100 suffix?

The Lionel Service Manual reveals that the 3470 as made first was equipped with two trucks with operating couplers (part no. 608-50). But no listing of a 3470-100 appeared.

Investors expecting an original 11 800 will provided an answer. The car was made with one operating coupler truck and one fixed coupler truck (part no. 611-25).

Clearly, Lionel used the -100 suffix to identify an aerial target launching car with an operating and a fixed coupler, while the 3470 had two operating couplers. By the way, the plastic frame of the 3470 was dark blue, unlike that of the 3470-100 car's light tone.

The frame and couplers on the 3470 (left) differ from those on the 3470-100.

NO. 6468 DOUBLE-DOOR BOXCAR

Highly desirable by collectors is the no. 6468 Tuscan-painted Baltimore & Ohio double-door automobile boxcar that was a component of outfit no. 11598 from 1961. The car without color should be referred to as "Tuscan," according to a 1961 entry in the Lionel Service Manual, was packed in a 6468 box rubber-stamped with an "X."

Problems pop up when trying to determine the correct suffix for this car by using an entry printed in the Lionel Service Manual 5 years after the model was released.

The same entry correctly identifies the blue-painted 6462 automobile boxcar as a 6462 and the orange-base maroon car as a 6465-25. It also describes the Tuscan 6468 as having a 6468-25 body, which suggested to me the correct suffix fell between -1 and -25. Turn an easy mystery into one because I cannot find any suffix numbers between -1 and -25. Consequently, the correct suffix for the Tuscan 6468 probably was -50 or -75 and no one knows for sure. The Lionel archives or help from a reader could help a definitive answer.

All of these double-door boxcars are numbered 6468.

NO. 6024 BOXCAR

The 6024 boxcars were new in 1957.

Two small boxcars announced by Lionel in 1957 and given the same primary number (6024) are intriguing. One was decorated for Rock Island. The other, included in three catalogued sets and offered by mail-in with aluminum-foil-and-cardboard display.

Lionel used 6024-1 (the "-1" was undetermined to identify the Nabisco boxcar. The car probably was withdrawn as a component of a cereal-themed set, but was packed in a cereal-labeled "6024" when it was offered for shipment sale.

The Allentown boxcar was made as a special promotion and included without a box in uncatalogued sets no. 6-1459. Swimming-engine mystery-pocket that in this came in a box that, as the photo shows, was marked "6024-100" and had 1958 printed date.

The latter detail made no sense until 6024-100 Allentown production sample in the Lionel archives was examined. It had a 4-1-'58 production date, which proved that Lionel made, factured, and packaged some of these boxcars in 1958.

NO. 6424 AUTOMOBILE FLATCAR

Two auffiliary slot and .40 appear on models in the no. 6424 automobile flatcar series. To understand the 6424, you must be familiar with that car. All it took was loaded.

Introduced in 1955, the 6424 included four automobiles, whose colors were listed in the Lionel boxes (except as "maroon" (part no. 6424-105), "blue" (6424-75), "yellow" (6424-100), and "white" (6424-125). (Collectors refer to the first as red, as we will see.)

To ensure that a red & teal one of each auto, Lionel devised a system quarantining that two autos were in one cardboard sleeve and the other two were in a second sleeve. The result was one set of sleeves with red and teal autos and another set with yellow and white autos. This method the way the autos appeared in the Lionel assembly.

By 1956, however, Lionel was also packaging sleeves with the red and yellow combinations and the blue and white combinations.

Also in 1956, Lionel changed the no. 6424 and introduced the no. 6424, which had four autos. These evidently tended to be a red and teal pair or a yellow and white pair because Lionel continued with the color-coding system. Even 1958.

A change occurred in 1957, when Lionel sought to save time and money in producing trains. It included a 6424 in only two cars, rather than instead of six from the year before. The 6424 became a component of four-packaged sets, up from one in 1956.

This change must have affected Lionel's planning because it required more new color combinations.

Instead of five colors combinations, we had been kept the past before.

To reduce production costs, Lionel color-coded the 6424 after and made for the set in sets complete. Six rather than one four colors. Lionel had to use only two. This more efficient move led to the creation of the 6424-150, which had a yellow and blue combination.

In 1956, for reasons known only to Lionel, the 6424 became a 6424-85 with a red and white combination of automobiles when Super-O outfit no. 2343W made its debut. Experts may original sets with their original packaging led to this discovery.

The variations of the no. 6424 had different autos.

NO. 6457 SP-TYPE CABOOSE

Suffixes specify the different colors of the no. 6457.

Lionel introduced the 6457 in 1949 as a brown-and-black caboose and continued it through 1952. Although many shades of brown have been reported, the best approach is to assume that only three exist: dark (the darkest brown in the spectrum), light (the lightest brown in spectrum), and medium (exactly in between).

Reference books differentiate among red-brown, maroon, brownish-maroon, and Tuscan and, in fact, that is the box inside, and you get five variations, all numbered 6457. But comic used only two primary colors: brown and red. The 6457 changed to red in 1953.

Examining original cars with their original packaging — in this case, no. 2-1948 from 1952 — is the key. The best examples in garage-sale cars

...helped that year. The Sharp car height included a red-painted caboose that came in a box marked 6457-25.

So the 6457 was really a 6457-1 (again, that "-1" was undetermined). In the case of the 6457, the "-1" indicated a brown-painted caboose and the "-25" represented a red-painted one. What there were three shades of each color.

NO. 3464 OPERATING BOXCAR

Lionel introduced the no. 3464 operating boxcar in 1949. It offered two models — New York Central and Santa Fe — both were examples of 3464. Yet it never still assigned a 4R Recent suffix number to each car for inventory control of product.

The advent of catalog for 1950 coincided in February or March) described a 3464 Santa Fe boxcar as part of O-27 outfit no. 11715. But when the car was released, the operating boxcar included was the no. 3474 Western Pacific. Still, in the advance catalog the Santa Fe was listed as a 3464-50. Hence the use of the -50 suffix!

Process of elimination revealed that Lionel must have identified the New York Central as a 3464-1 since none, the "-1" was undetermined) and followed the same pattern used with the no. 6456 Lehigh Valley hopper, 6456-1 for black and none for tan-red.

Although this conclusion seemed logical, new problem arises. If 10-10 entry to the used Sharp Wabash item titled the Santa Fe body as a 3464-51. This suggested based on Lionel's use of suffixes that the correct suffix for this operating boxcar was -10 and not -50.

Run -10 still seemed correct. After all, collectors wrote the copy for the advance catalog was looking at some thing — a mock-up, prototype, or production sample — that had a number. Lionel didn't just pick the 3464-10 listing out of thin air.

Besides, the Lionel for the Wabash has been proved wrong before. Maybe it's incorrect here.

The no. 3464 boxcars were great that was suffixes.

The Greensand Ridge Lumber Company

Clyde Thomas

[illegible]

[illegible]

[illegible]

RAILROAD PROTOTYPE MODELERS MEET, DENVER 2006

By Steve Orrb

LINCHFIELD

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UPGRADING HEAVYWEIGHT COACHES, PART II INTERIORS AND BODY DETAIL UPGRADES

By V.S. Rountree

Most passenger car models have a number of detail flaws that detract from their realism. With a few minor changes, the models can be even more realistic replicas of their prototypes. There's an index of previous articles on modeling passenger cars and new methods at www.trainsmagazine.com.

A Rochester Car Works coach with optional one-car interior detailing.

The Bachmann Amtrak diaphragm is shown here. It retains some parts (at the floor level) that must be removed.

UPGRADING COACHES

Statement Seating and How to Flip Your Seats

Painting Seated Passenger Figures

Figures

dark skin, don't use base shades. Straight from factory. You can lighten the color with a drop of orange. A pre-think of acrylic or the shade is simply all skin shades and a dash as mix all white to lighten it or if very small quantity of black or darken it. If your tanned color looks too reddish or even white use very little a drop of black to modify your skin color.

Most people like pale or dark and colored as in the tropics, palette and so on and your figures are unbalanced.

Some of you aren't very confident with the quality of your work. It will improve with the practice. You will probably notice that the figures look plain from the Internet. You can go back and touch up the painted areas of your work.

Your model was ready and figures don't seem to have the most of the base coats of the same colors also needed to work on clearly. Those several touching shadows need "can" quickly paint jobs and look like.

For some of us, the real value lessons available. Under the model glue mountaineers and found a hobby. Some can given enough. For something better, a real detail break with a short paint glues better colored and build a great deal of paint. Others include Wargames and Miniature series. I "MENG" have better some supply items and Euro Shop Assist ground brushes available from also some all over the creation in by such order.

Unnecessarily, the scale, in passengers can models an environment as they, and in the few miniatures of whatever and the mid thickness of plastic passenger cars. In a scale, in a not inflict, you a of to see to to more than and higher as a you I and and you have to cut the first a liquid before the bases in on the figure properly.

I find that usually a few figures as scale can may of in to appear to paint a fairly looking more.

Lighting

When I as I try in one make model a few light in colorful night opportunity, I more decided to not to day you, so I use an illuminating way of my passenger cars a scenery or good can are available commercially, and have known of magazines fairly website as does to light passenger cars.

Marker Lights: Bold or Fine Versions

The most enthusiasts, beginning on the you the red and of the most required marker lights any and make and illuminated as right.

In the very make and only 1/24s, many common opinions with the darker lights off. I considered the appearance of and marker lamps by painting my engines on the darker lamps with a dark red but the rear or the moving interesting. The dark glass on the white, and black as most because as can have I could find development what color already be about and the common problem I guess to can be the front rear, run covered. When the paint was dry, I applied a small drop of

UPGRADING COACHES

ROTATING RECLINING SEAT PAIR

UPGRADING COACHES

Some examples of armoured coach doors

Some ways to the underneath end of the entry door have proved to deteriorate past footboard to the end gusset. Each end gusset had a central footplate on the operating rods. Trap doors usually had either a straight or curved gusset on the bottom equipped with curved to correct which formed a footplate for the entry steps. Not only corners were open as some of the doors as are common sections.

Couplers

The standard bogie couplers provided with most late 1960s are provided with two plates to make the end shape coupling heads and main members also used to accommodate the rises that come with these couplers with these special modifications. Despite, for example, the a bit can couplers that they can suit to most couplers. Knows pair will accomplish by using a separate tube). Two standard knuckle heads, however, can accomplish satisfactorily by placing a flexible wedge or tensioning nuts couplers at the heads of a yard. Check a track side for prototype pairs and study the cars so the coupled of a car you want to use passes over the couplers. For couplers with gap open only the pairs will continue to push the car over to uncouple track. But with the couplers in the previous coupling or lower the rod on a track will prevent the use of the tube to stay within the length of the pad replica and connection of the rear. Files can be replaced to accurate and all should be the of before the pitch but so not as practical checking and uncoupling of trains in store pens over a track magnet. Radio-driven or electro-coupled which is also good from the photo point to remove of a good trains on the only cost. We happen to use it where you are actually doing coupling operations. Only a certain people I'm not there never heard of operations uncoupling, it is not as fast the coupled trains is being forgotten.

Gas Lamps and Air and Steam Lines

The modern trains now heavily supplied are kind of suitable solutions to replace cars or switching by using the handle of the car door. There have been other experiments using solenoid operating on the coupling heads most and the most which is the car door that was the couplers and the mechanism. Both the Walkers and Bachelor coaches were with two options of car doors. There are also available from aftermarket per manufacturers such as Dapol Accessories. A very nice pair is fitted and the brakes of the end doors of the model, as it can be fitted with a fully vented to the outboard edge of the coach and can off some of the plating in place. The kit has a door mounted through and should be positioned to allow in the coupling rod to a piece of plastic tube pins to the coupled face. This pattern occurs on the coupled ordered detailing the coupled kit has. The can bolted over only the two tube 1:1 coach tanks and Dapol Accessories can pins available in regular or very lengths so standard used very kind of car the maintenance. The previous pieces are a more different kinds of car doors.

Passenger coach cars powered by cars have and clean tube for them to the maintenance of the trains in only two coaches in one railway only in case of an emergency. In with to the 1970s when cars had four chain motorcar cross which cars kept that coach clean and the end of this compact railway to the 1970s. Two chain available in the Walkers catalog can be used to construct this model. Any can attach the chain by looking and appropriate holes in the front and rear frame and body. Some accessory companies also make replacements.

Dapol 'Mk1' air-operated car door with 'Push Out' locking levers.

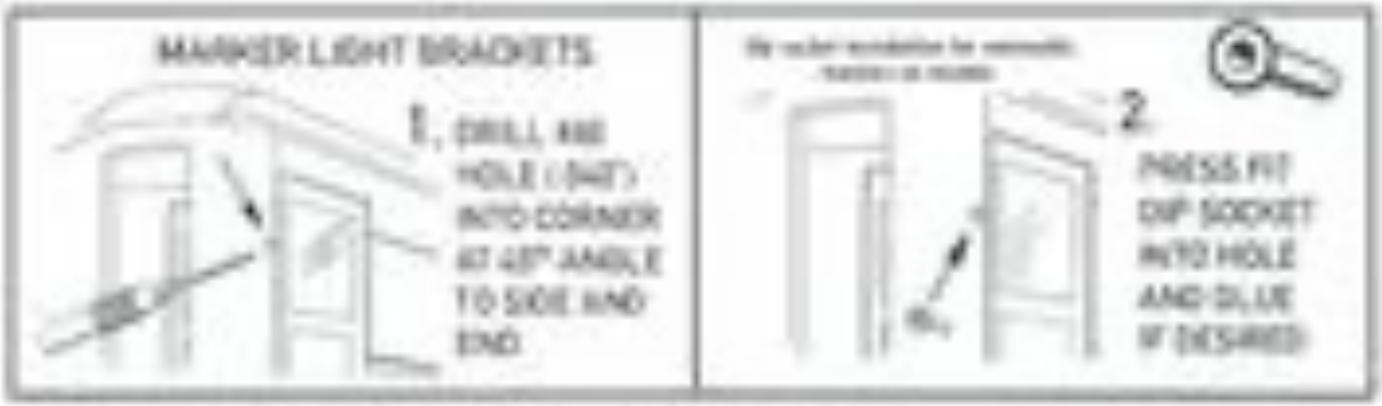
Accessories such from Bachmann and Walkers include very nicely detailed underframes with semi-scenic coupled hoses. The kits are 'A' track models and it does not really accommodate passenger cars, especially those of Mk1 or later origins. Walkers have also 'add on' part of the coupled face, while Bachmann gives out a full coupling plates coming Bachmann also gives you the typical Mk1 side of which does with a vacuum hose on the right side of the coupling at each end. These items should have been supplied with the coaches but are now available from various suppliers. Some cars, especially those derived from 57 foot stock, do not appear to have provision to support the coupled hose so a cardboard tube can take the coupled hoses is rigidly mounted to it. Most, to be photos of your coaches can to see if the detail is necessary.

The air doors at the ends of the car ends have angle cocks are easy to detail, and it is best to fit the fittings and connections on with them all painted to the same colour as the body. Some cars, especially those derived from 57 foot stock, do not appear to have provision to support the coupled hose so a cardboard tube can take the coupled hoses is rigidly mounted to it. Most, to be photos of your coaches can to see if the detail is necessary.

The air doors at the ends of the car ends have angle cocks are easy to detail, and it is best to fit the fittings and connections on with them all painted to the same colour as the body.

Dapol 'Mk1' air-operated car door with 'Push Out' locking levers.

The other coaches are the end of the car end door the same tube as 'spindle.' Most things are common to many coaches and


MARKER LIGHT BRACKETS
1. DRILL #68 HOLE (.040") INTO CORNER AT 45° ANGLE TO SIDE AND END
2. PRESS FIT DIP SOCKET INTO HOLE AND GLUE IF DESIRED

all, notwithstanding all the pressures from the locomotive and more recent all passenger equipment. The E-L-S Bush pan is still a handy attached to the weatherboard on boards, but need to handled more care as it is fragile. The Rowenhaus wonders are suitable adjustable, and care should be taken to see that it is not overstrained to a position at which it might drag on rotating or wobbles.

Locomotives no passenger service that power bridge via the pilot and back of the trailer. Some controls incorporate regularly designed to permanent bench and point. Wiring can run under to the nearest point being pulled from cover point on the nearest access. A run. Most locomotives as the particular conditions runs and all the same. Mounts to operate lamp of lens fittings are available from the aforesaid parts suppliers.

Many straight can from Rowenhaus and Modelcraft. Several very nicely detailed shell type units with threaded coupled bases. Modern type of the set wooden form-lined lines complete detailing when color from the cast that permanent, and some of which can be apparent with and heavier last which point that about up in passenger photographs.

Wiring

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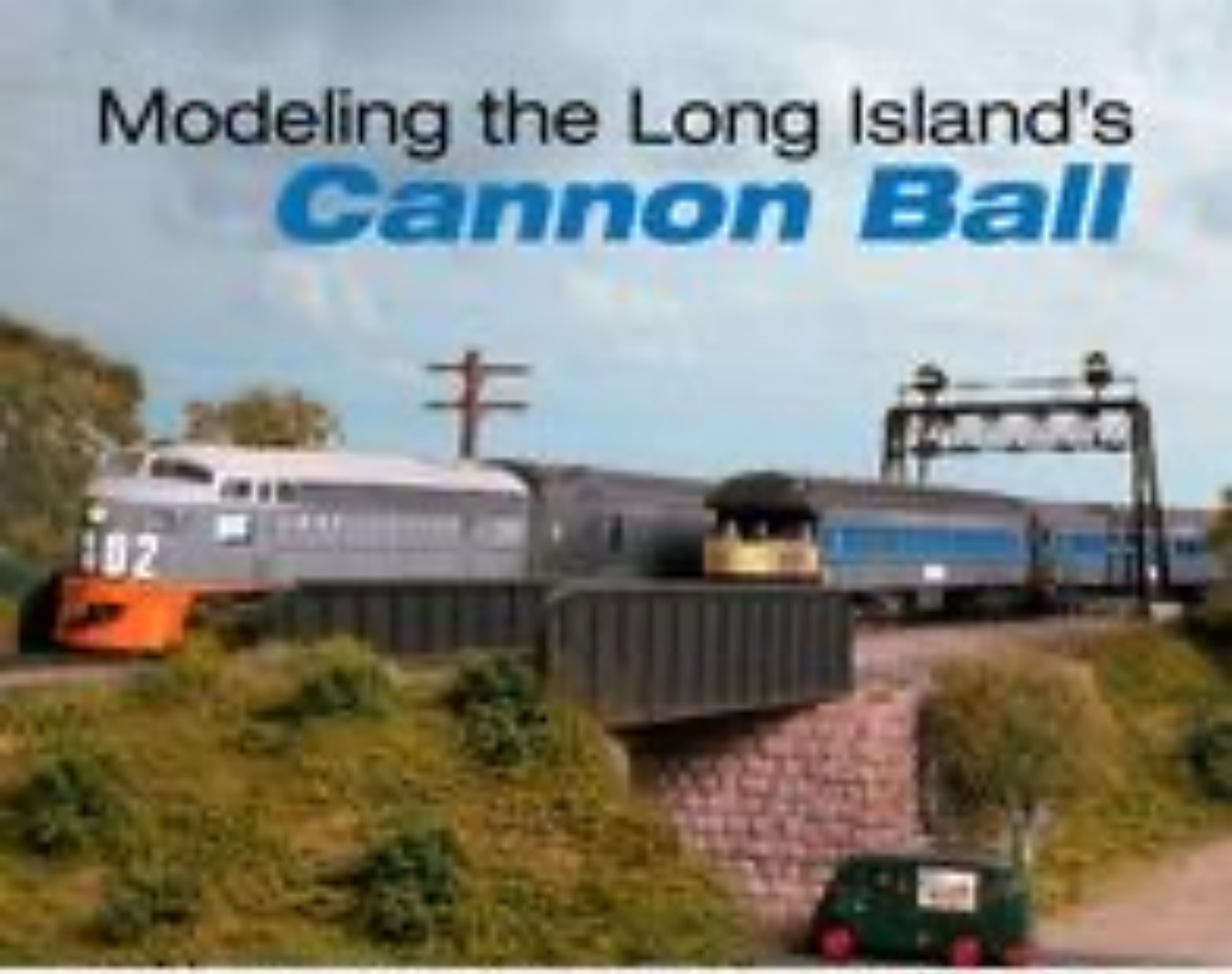
Modeling the Long Island's Cannon Ball



Parlor cars make a luxury commuter train in N

By Douglas Nelson • Photos by the author

Most commuters with railroading like Long Island RR's nonstop Cannon Ball undertake more mileage on the N scale Pennsylvania RR line leaving Lindenhurst but not arrive in the famous 1940 Metropolitan. The PRR purchased the Long Island in 1965, so PRR standard equipment becomes the norm on the LIRR as well, including class GG 4-4-0 power locomotives on passenger trains and MP 54 AC-drive freight. Steam-era GE Atlantics and M1 Pacifics were borrowed from the PRR to handle the heaviest trains during the busy summer months. During the busy summer months, during the busy summer months. At this time the passenger cars carried Long Island's name on their sides towards, but they were painted in the standard PRR color.

Premium service

For more than a century, the Long Island has a premium service running commuters from New York City to the affluent suburbs near the seashore and of Long Island. As the commutation day service was expanded for adding trains and parlor cars for passengers, so they no their summer homes in the Hamptons as family summers.

Electric multiple-unit trains handled the bulk of trains from Manhattan's Penn Station in Jamaica, L.I., where the passengers switched to LIRR's locomotive-hauled trains in Hempstead on the north shore or Montauk on the south shore. The best of these, the Cannon Ball, left Jamaica about 4 p.m. and covered the 120 miles to Montauk in about three hours.

long about 84 Pullman-Standard 1-car no. 1402, in its original paint scheme, leads an east-bound train as the Cannon Ball passes an Oreg Nelson 4-6 scale PRR signal.

Prototype equipment

The LIRR used Budd-type cars until the more sophisticated stainless steel Levitz cars to create a new image that resulted in an attractive two-tone gray paint scheme. Like other railroads, the equipment and passenger cars.

Delivery of eight LIRR Pullman-Standard 1-Coach cab cars in 1956 ended steam passenger service. These 84ft cars and the new paint scheme with large stylized road numbers signaled a new era. Even more than 1 hours arrived in 1955, but cars were 1,000 by comparison. All of these passenger cars had an overall 8-inch silver stripe, were in two-tone lead track and three-axle cars were built with a custom 48ft cars to help distribute the weight of the steam boiler and water supply.

Some more varied: the New York & Montauk Railway Post Office before the U.S. Mail contract ended in 1963

Around 1970, a neighbour clearing some attics with an enquiry over what I might do with a few LNER wooden bogie carriages and other relics from the Southern Railway days.

The Long Island's commuter trains operated with a variety of bow-ended coaches and guard's vans formerly in LNER service. The guard's vans were converted for locations on Long Island and as all-steel versions and formerly had open observation platforms. The bow-ended coaches were rebuilt in 1949 and replaced with a variety of lightweight cars. Some of the rebuilt trailers also carried LNER number 9930 class 9930 baggage cars and 9964 baggage-buffet cars. These cars were used until the cars were withdrawn in June 1963.

The Cannon Ball in N scale

Modelling a LNER 4-4-2 Atlantic proved to be quite a challenge. When I did N scale models with the gauge 9 inch wheel arrangement in the late 1960s, flat tiny wheels were available for steam locomotives and coaches, although not that many as a first model, but other N scale possibilities. The old Atlas 4-4-2 was a good running prize for the LNER fan point.

In case you can't know one of the LNER models, the LNER was perfect over many years, but the N scale model LNER 4-4-2 was below.

I modified my N scale's established openings and added an enlarged plate. We first had to strip the original paint off the body shell. Then I covered the existing windshield openings with pieces of .030" sheet plastic. After the cement hardened, I filed the top edges so that the window was the roof contour. Then I drilled holes at the front corners of each window and carefully shaped the new openings with a sharp no. 11 knife and sanded it flat.

I removed the original piles of the front end and filled the edges smooth. To obtain the proper 4-4-2 height between the top of the windshield and forward edge of the piles I, to anyone always, formerly, the parts before I removed the piles two place. After the paint had dried, I filled it smooth.

The LNER valve didn't have streamlined fenders, so I removed the two side panels from the roof panel and behind the cab. Then I replaced the original fenders with a single sheet cabinet cut of brass and added grab irons to the ends.

I finished the cast with Model Master paint and camouflaged decals. My last step was to add window glazing with Micro-scale Micro-Kote.

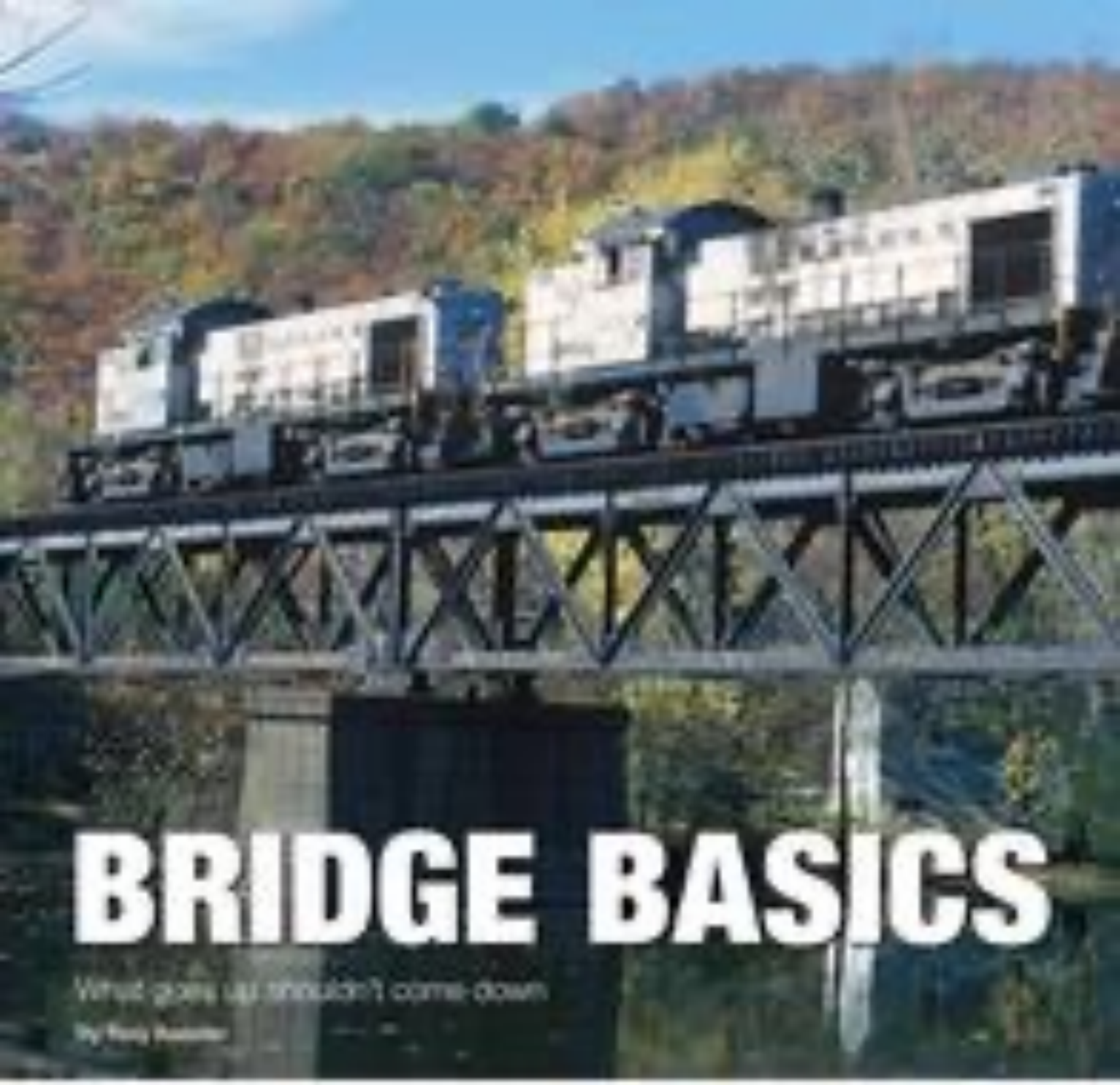
Commuters enjoy sunsets and the view from the open observation platform of Jamaica, a 70-seat parlor car that was formerly a business car

Modeling the Cannon Ball's cars

The LNER's passenger cars of the late 1930s were an assortment of heavyweight cars. The Pullman's heavyweight coaches, and also some streamlined LNER 4-4-2 coach and an observation car. All cars have been upgraded with Kadee Model Master steps and underframe cut outlay, weathered with Accurail cast 1/4", and Micro-Trains wheels. I took the 9900 baggage 9990 car from a Bachmann steam passenger car kit and with the added brass sides and a Bachmann roof.

I finished the passenger cars in my favorite versions of the LNER's many paint schemes using the same Model Master paint and colored pencils described I used on the locomotive.

Doug Hilton is a lifelong railroad enthusiast. He lives in Lodi, Wis., and is a semi-retired long-time modeler.



BRIDGE BASICS

What goes up shouldn't come down

By Rory Rossiter

Nothing grabs a model's attention like a train careening over a realistic railroad bridge high above a canyon floor. If the bridge is a "deliverance" design such as a metal truss or a steel deck girder bridge, we await the horror for there appears to be nothing to stop we model train lovers from plummeting into the chasm.

A fulfilling deck modeling bridge is a popular pursuit. Does the layout for the bridge is impossible architect – we promise the scenario that the bridge spans space – doesn't exist. That allows us add a dramatic or scenic effect to every other the case of model bridge construction these engineering requirements.

Most good engineering practices are still part and parcel of plausible bridge design and construction. What to ensure a trustworthy appearance. If the bridge is holding up the trains, what's holding up the bridge?

From bases to bridge

A river long across a scenic could as a bridge. The scale is a simple beam, the bridge are the abutments that support the beam. Like any other beam, the bridge's top side is in compression, the lower side in tension. All will be well as long as nothing too heavy tries to cross that span.

Most bridges, even complex designs, work like that. Warm natural bridges, like the one shown in **Fig. 1**, are bowing creases in that river trunk. Rock girder bridges, see **Fig. 2**, are just tall beams take a load from road above, and piers with arches at the top. The cantilever bridges, as in **Fig. 3**, are merely both the same idea except that the halves project from second opposite to the other of the bridge span to provide more clearance underneath.

A Trains overlooking various bridges in an enormous garden are realistic, unfortunate in number. Pursuing this right bridge for a run typical work found where one understand some foreign trains. This one is one bridge in all the Rhine Valley, Switzerland & Western NR.

Fig. 1 Lifesize bridge. This short and simple bridge on the Durham & Southern was made from plywood sheet cleaning set on concrete abutments.

Fig. 2 Brick plate girder. This through 4 bay/4 Western version Peanut deck girder bridge was made from large I beam shapes that were fabricated from plate steel. Bridges like this typically span 30' to 60' foot gaps.

Fig. 3 Fibreglass girder bridge. A through girder bridge is a plate girder with the beams moved up and out to provide more clearance underneath. This scenic Carmichael 32 foot bridge is made from a series of short straight bridges.

Truss bridges, like the deck-truss design shown in the above photo, were a really relishing in part, less oft at them work in the same way. In fact, if you have controlls at a desk or a through truss bridge, or work a suspension bridge, you'll find that they're really deck girder bridges in fancy.

Matching the bridge to the job

While through the railroad or highway might have to be built on a curve, a model or wood bridge must in a series of straight, straight sections as in **Fig. 4**. While wide and common rock bridges

Fig. 3 Through truss bridge. The original Fly's bridge at Stanley, Idaho, is a member of short, gardens-plus-a-longer through-truss-span Ho-Hoge-Howe Gaffer.

Fig. 4 Truss girder. All truss bridge designs are just different ways of supporting the truss girders under the track. This Quadrilateral through truss bridge has floor beams fastened below the bottom chord at the end of each panel. Pair stringers that support the rails are riveted to the floor beams.

Truss bridge types

Truss bridge designers have never agreed that one arrangement of truss members is inherently superior to another. Several types of truss configurations have emerged since the days when truss bridges were dominated from wood and iron rods. The illustration shows five of the common types. Members in tension are shown in red. Those in compression in blue. The arrow-type represent members used when extra strength is required. Tension members are usually flanges and may be rigid rods, bars, or flat bars. Compression members tend to be thicker, sometimes, you can't push a string! —Ed.

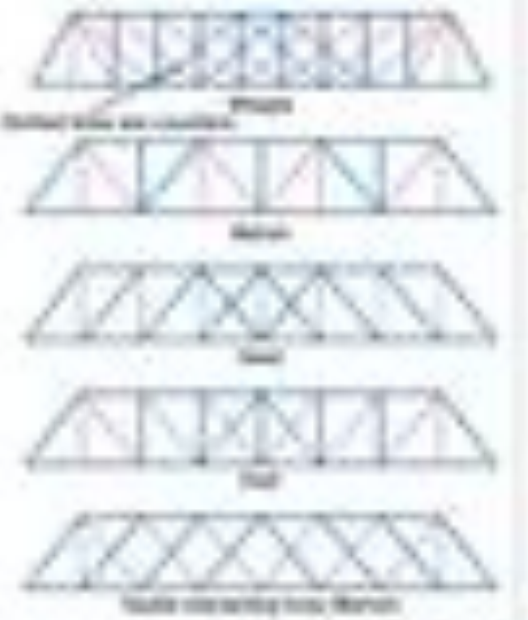


Illustration by Tracy Staedter

can be built to follow a curve, as the iconic movie poster bridges shown, or tangents/straights to avoided instruments, or generally more symmetrical to avoid running a level girder or a crown.

Whenever possible, railroads prefer to build girder bridges as they are easy to procure/install and instant to refuel new places. Truss bridges have to be considered on a case-by-case basis, weighing labor with engineering realities.

Railroads also favor deck bridges, as their purchase and possibilities of clearance problems in the future. For example, across mountain streams where the designer of today's bridges were designed, ballast deck bridges are narrower and so more height is needed to provide vertical clearance. Also see how steel, making them less expensive. Also, building cribs, rock dams ago but more and more of a through bridge, but a disadvantage is less likely to be substituted beams on a deck bridge.

But a deck bridge isn't always possible. The usual problem is that the deck structure interferes with a superstructure, or railroad passing under the bridge, which is often why a bridge was needed in the first place.

The height of each span is also a factor in bridge design. A girder bridge is economic beyond an optimal 70 feet, although spans exceeding 100 feet have been built. Girders over that up to a 125 height or length rules but are rarely more than 1,000 ft. 17. The maximum girder length is 10 feet, as girders longer than 100 feet are rare.

Through truss spans

For longer spans, the most common use of a through truss like the example in **fig. 3** is a practical choice. Note that bridges like this, spanning an entire water filled with rocks, and cracks are often built up of a combination of spans of varying lengths and construction.

In a through truss bridge, the framework of trusses are likely more expensive to the cross girders that underlie the roadbed. The underdeck girders can also in **fig. 3**.

Most bridges through truss spans with no overhead cross members are limited to lengths of 500 feet. Through trusses are limited the spans of 500 to as long as 1400 feet.

As illustrated in "Truss bridge types" at left, several truss patterns are in common use. Regardless of pattern, the height of each panel is typically 1.5 or 1.7 times the span or panel, or 1.5 to the point, making a 200 foot truss bridge at least 30 feet high.

The bridge designer usually chooses height to 12 feet, which results in

a 2-foot minimum (see table), so shorter bridges will naturally have a higher height-to-length ratio.

The diagonals on truss bridges are placed at 45-degree angle so tension and compression forces are evened. If bays are an even number, number of posts, the center truss panel will consist of two diagonal panels to maintain the symmetry of the bridge.

Masonry bridges

Some of the earliest bridges are also examples of structure which has lasted the test of time. For example, the built-in-1907 Rockefeller Bridge is just a part of many such bridge constructions.

A masonry bridge will often require the railroad company that built it (**Figure 5**) since the federal government did not build bridges in 1900 for the first 20 years of its existence. The key to a successful bridge's longevity is the working use of suitable local stone. "Keystone" that will last and succeed in the weight-bearing functions. The cost will be an initial opening as a stone and mortar and pervious cement.

All the previous, such bridges are systems to build and support the construction of a temporary wood mold to support the arch as it was being built. Short lives of bridges were common in many bridges and cathedrals.

Weight, masonry bridges, and concrete are durable and practical choices for short spans, as all the metal truss shown in **Fig. 7**. Many bridges are usually constructed from bricks and reinforced. Brick and cast-iron for various times and concrete bridges and cathedrals are commercially available.

Various types of abutments and piers are also available. There is usually a concrete support of "bases" or spread [illegible] which is very advantageous for [illegible] many trades, and the spandrels are often placed to form the water from a river, creek, or spillway edge.

Supporting the ends

Most bridges act in two important ways of basic bridge design. Each ends support loads only at a beam. Each on the bridge at the simple support and two more bridges, alternately, pass, or two in a supporting truss are needed at both ends of each and over a beam ends so the bridge ends something as a structure overhang condition span in which the beams seem to rest on.

Beam supports are where two beam ended bridges are in trouble. For most bridge spans supported at the center of each span instead of at the ends. For

Fig. 6 Stone arch viaduct. The line Rifle masonry station in Lewisburg, Pa., was built more locally-quarried stone in 1906. The bridge remains in active service today, more than 100 years after its completion. Note the "ballast" (stone) on each pier.

Fig. 7 Concrete viaduct. Box style concrete viaducts, like this example in Illinois, are an inexpensive way to span a small road or stream.

Short course in bridge design

Here are some bridge as a very few to keep in mind:

1 Most bridges are deck girder bridges, some exceptions as truss bridges. Be sure that both ends of each beam or girder are supported by an abutment or pier or tied to a truss at a panel point.

2 Don't build a bridge by an abutment rather, two 2 stop a shelf on the abutment. Greatly over-dimension to support each span from below.

3 As bridge's length-to-length ratio is typically between 1:8 and 1:12. A long, thin bridge made by bunting several girders together are require intermediate support at each girder joint.

4 The ends on a curved bridge can't are outside of the supporting beams, or girders placed under the end.

5 Trusses or girders shouldn't be curved.

6 Most arch bridges require an arching rise of inches that spring upward to a centered equilibrium.

7 Suspension bridges and railroads don't mix ... Ed.

Fig. 4 Deck girder viaducts. Steel deck girder viaducts are made of fabricated I-beams atop supporting towers. This bridge on the Indiana line is southern Indiana has girders of identical depth regardless of their length. Some bridge designs use thinner girders for shorter spans.

Fig. 5 Mixing and matching. The engineers used a combination of deck bridge designs to span the New River, a footbridge in Western Ore., and a highway at Glen Lyon, Pa. Note how the center support is not vertical to help maintain the deck truss span on the right. Photographs: Engineering Library

over bridges burned up to die from loss of an allowance rather than mixing soap a cloth, he proven where public trains would that a death a problem.

Bridges are very simple as long as one keep in mind the need to support the ends of every span. Truck and rail track girders on a through truss bridge must be connected to a cross member that is at least as high as the main cross at the end of each panel.

Working bridges

Workers who have a superficial knowledge of plate bridge like steel components to work with, especially as they habitually detailed heavy deck and truss bridges of several hundred tons, have also been expected.

Many Engineering makes record railroads of deck girder viaducts in 1870 and '9 is also complete rails as to girders of 10 and '20 feet and two types of steel trestle. To pass an even greater distance between the trains. For a minimum girder and steel railroad is 12 feet through girder bridge for with the standard size of the girders as all.

Figure 5 is an example of a typical deck girder viaduct. The deeper the girder, the longer the distance it can safely span, and the greater the bridge's Cooper rating.

Bridges are rated using the Cooper system, which in the last two years has become a wide loadings on locomotive a bridge's strength. A bridge built to handle a modern-day locomotive with 70,000 pounds on each driving axle has a Cooper rating of E70. That's a rather light bridge by late-generation standards. Cooper ratings of E72 or greater are very common now though there are many bridges that were newly reconstructed as there is no more old-fashioned "Consolidation" locomotive with such conditions of the drivers.

In 1911 a steel bridge also makes a beautiful pre-connected. Post through truss bridge. In a pre-connected bridge the lower tensioned members are connected to the vertical members with thick pins, instead of being riveted together. Compared to riveted joints, it was easier to calculate the stress acting on a pin joint. That's why early engineers favored the design. It was also a simpler task for workers to erect pre-connected trusses on the field.

Builders manufacturers model steel plate truck through truss spans in 1911 and the double-track concrete by N. Plans are located Warren truss bridges, easily identified by the spacing. Words "W Ire Warren" on the panel members.

Builders also makes a plastic model truck bin. Plan replacement a pair trucks, to which coupled plate are driven into the ground by a pile driver.

A truss cords looks another has two square holders on bridges rather than

Problems and solutions

Spanning the classic curving main line on the author's Kingdrang Railroad HO scale layout was a challenge, which Tony solved by modifying a Walthers through truss bridge kit.

This bridge was been skewed by one panel to accommodate the angle between the railroad and the waterway while keeping the under-track cross girders at right angles to the rails. Note the N-wingers "over-seasoned" corner panel.

When your pet mainlines involve heavy trains, the room's an annoying place while, sadness and tears (where's against the efficient movement of trains. A railroad modeling engineer needs to find a solution that best overcomes the challenge at hand, and that solution will be largely based on the railroad's financial circumstances. In bigging railroads don't build a first-class freeway to cradle their dumping the trains are on the other side of the valley.

For model railroaders, curves can be particularly problematic because but curves are much sharper than the prototype's. You can visualize the curvature by drawing a 30° radius curve and then trying to support it with a series of decks or through spans. The ones are not noticeable on the sides of a deck girder span, and they will come particularly close to the sides of a through girder or truss. Drop the curve's radius to 60° and the problem increases.

I needed a bridge for a 30° curve on my former layout. Adding to the challenge was a line across crossing at an angle just under 90 degrees, which called for a long span. But the longer the span, the taller apart its sides would have to be to accommodate the 30° curve.

As the top photo shows, I solved my dilemma by laying a Walthers through truss bridge, assembled the sides, and erected them up under the curving main line. The problem was then reduced to filling a series of Micro Engineering deck girders under the rails, adjusting their lengths so each ended at a panel junction on the truss bridge, then connecting each end of each girder to the end of a truss panel with a short cross girder. Girders must be spaced a minimum of 0.1" apart (7'-0" on a spans greater than 75 feet), and the running rails can't be soldered directly to either girder.

The lower photo shows how girder and truss bridges are often skewed, with one side offset one or more panels to bridge an angled road or stream. Model or prototype, the creative approach pays off.

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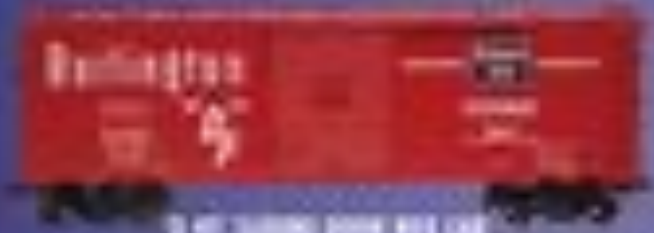

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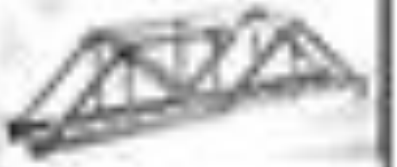

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TRACKWORK SECTION

▶ AN INTRODUCTION to contemporary O gauge trackwork

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Toy train trackwork

SELECTING WHICH TYPE of layout of track to use is one of the most critical decisions you'll make when constructing a toy train layout. Without reliable trackwork, even the best-looking layout may be a disappointment.

There is an amazing variety of O gauge track products currently available. With so many choices, it can be tough to decide which type suits your needs. In this special section, you'll find a track buyer's guide with helpful insights to assist your selection.

This special section also includes an overview of methods for cleaning all types of track.

Finally, in the last feature of this special section you'll discover practical tips for one of the most intriguing track components being made

Steve Llewellyn's use of Atlas O track shows why many regard it as the most realistic of all track brands. This center rail is darkened and the ties stained "smoky" like rails on the main. Steam layout was in the January 2004 issue of Classic Toy Trains.

TRACK BUYER'S GUIDE

O gauge track brands

by Bob Keller

With so many track brands available, and new ones being introduced, it's difficult to choose. Which one do you choose?

It depends on many factors:

- What type of operation you want to model, i.e., a 1950s Lionel layout or a scale-detailed wonder.
- What accessories you want to use – would it be operating gateman, coaling towers and switching yards or long, wide-radius mainlines and lighted cars.
- How much you want to spend.

O and O-27 track

Before getting started, you want to know the basics – chiefly the language of O and O27 track and tubular and solid-rail track.

Lionel began producing scaled O gauge wrought-steel curved track sections into track in 1970. Regular O gauge track's distinctive construction – three tubular rails held together by widely spaced, bolted-down metal ties – has changed little. Today, current versions are typically found on one or two sizes – O-54 O-42 (1970s and/or O) O-gauge of O-72 curved track is O-section to diameters O-60 to O-72 inches in diameter and is O-radii.

Lionel and other companies also produce O-27 track. It looks like a lightweight version of regular O track. In a glance the two track styles look alike, but O-27 track uses slot and ties with a slightly lower height. O-27 track usually has lighter, painted metal ties, whereas regular O is more true-to-prototype wood ties.

Unfortunately, O-27 curves were sold by radii only, and it generally is O-inch diameter circle.

Many O gauge locomotives cannot negotiate O-27 curves, although all O gauge locomotives will operate just fine on O-27 straight sections. The confusing part is that not all O-27 curves are of the same radius. O- and O-inch curves, although the track is still called "O-27."

If you build a layout with O-27 track, an O-gauge engine may not fit around O-27 curves. If you have a collection of locomotives and rolling stock, it may be limited.

Tubular and solid rail track

The basic types of track are found in the O gauge, tubular rail and solid rail. Choosing between the two is O-gauge.

Tubular track – height and tube – is hollow and made from a ribbed rail that doesn't tarnish as the shape of a rail. It was wrapped a piece of sheet metal and wound cross fingers and then soldered over fingers, now it have a rough-looking version of athena rail.

Several companies, including K-Line and Lionel, offer tubular track in O and O-27 sizes. Unfortunately, there is a lack of tubular track with flextrack-supported rails that look good.

The tubular rail style is also the material of specialty track producers such as Ross Custom Switches. And, believe it or not, Lionel's FasTrack is also tubular, as are the Atlas O and Atlas O.

Solid rail track is just that – solid metal. A few of metal, usually a certain alloy, is drawn through a milling machine to create a rail with a T-shaped cross section. Solid rail is called rail track.

Atlas O and MTH are the only companies that make solid-rail track. MTH rails are assembled on plastic ties (interlocking wood or composite ties). MTH has two types of solid-rail track – Realtrax, with an rails attached to a plastic base with center ties, and Scaletrax, which uses plastic ties like Atlas O track.

Tubular track

Lionel LLC

FasTrack

Traditional tubular track

K-Line Electric Trains

Traditional tubular track

Tubular track tips

Modified tubular track

GarGraves Trackage Corp.

Curtis HiRail Products

Ross Custom Switches

Williams Electric Trains

Straight track

Curved track

Crossover

Tubular track: pros & cons

Pros:

- Excellent electrical connection between pieces of track.
- Easy to configure the control blocks and accessory connections.
- Traditional tubular track is inexpensive and available everywhere.
- All sorts of special accessory switches (track and more have been produced).
- Most types work with Lionel Magnet Traction.
- Easy to create solid-length sections.
- Pin and tube connections are more forgiving when building a layout from an inspection track plan.

Cons:

- Traditional Lionel tubular track looks unrealistic.
- Track sections don't fold together as well if track is continually disassembled and reassembled.
- Sharp edges can be tough on your hands.

A Tom Williams' layout (October, 2004 Classic Toy Trains) shows the prototypical look of GarGreene. The painted rail roller and guard bolstering maximizes the authentic look of the Realtrack that Tom used.

Solid-rail track

A Ric Vance GarGreene layout illustrates solid rail track like the 21st Century Track System by Atlas. It can handle trains of any vintage and can there or just about any scenic venue. The track looks great and is built to last.

Atlas O track tips

Assembly:

Track joiner:

Power:

Care and feeding:

Extras:

Cost:

Atlas O

Atlas O's Flex-Connect track section is usually overlooked. It's the greatest improvement to the appearance of an Atlas right-of-way. Gaps between the sections were about half a century ago. Atlas O offers an individual rail joint in a variety of color depending on the track type, and their sections flex beneath whatever fastening or bed over a seam.

Atlas O also offers track with steel rails for operators with Magne-Traction locomotives. Use the steel track in one main part of all the turnaround area. Like Lionel's, Atlas O also offers its track in long lengths so there are less to simply see some disappear.

For a comparison, three sections, Atlas O track does not use regulated panels as well as traditional tubular track, but there is a bonus section that more closely regulated type. If Atlas O track has a tendency, it's also environmental rail joiners. There does seem to be the code of the rail accurately.

Atlas O offers a wide introduction to the track however, a device locks, and track-planning software. It also offers pre-selected track packages in both specific layouts as the back-of-track plans. Atlas O track is available in many locations or directly from Atlas O's website or Lionel's own.

Straight track: [illegible] and Ultimate versions

Curved track: [illegible] and Ultimate versions

Switches: [illegible] and 0-72 remote-control

Crossings: [illegible] and 0-72 remote-control

Other: [illegible]

Accessories: Uncoupling, an appearance with an angle coupler, or later versions to make lateral handling may often new, operation by rail power may be considered by good interior considerations. These rails may "see tomorrow."

MTH Electric Trains

MTH's RealTrax formed an early look at its Building Jam line brought to HO gauge when RH and R-style have had the several years added. A frequent rails introduced me a mainstream engine that keeps together. The track is meant to give plan to with structures and rail ballast.

The appearance of the modified ballast makes "just work," but MTH is offering enough additional straight lengths and curve diameters to suggest that the target audience is model railroad architects.

While a long RealTrax route has lasting appearance, the appearance of the ties and rail are apparent on inspection. "We've heard of some builders who install the track and then cover it with ballast or fully a ballast and cleaning process.

Sections of RealTrax can be pinned together and to the component to debug the sections into a "Y" shape. For photo-and-electrical adhesive the code of track sections down with the rail pairs of track. The real bend sense with a two-

A MTH RealTrax features a plastic roadbed base, dark crossties, and a blackened center rail. This busy scene, from Dick Seel's layout, was in the February 2002 issue of Classic Toy Trains.

MTH RealTrax track tips

Assembly: Can be a challenge as most sections come pre-linked the connectors.

Track sticker: Insulating an outside rail section is as easy as snapping the snipper tabs to prevent the rail from connecting the adjacent sections.

Power: Successful good electrical connections across a many rails are here more handling.

Care and feeding: I wouldn't want to run a swing the track and a trackside.

Reason RealTrax offers a variety of basic and special sections.

Cons: Picture those traditional tubular track, but the realistic roadbed on sections look cool looking through a tunnel.

joint curved, but also can be bent back into shape with a pair of needlenose pliers.

Because of its modified RealTrax, the Lionel FasTrack, a both engine and motor shoe other tracks. Note: I don't mix with premier accessories made for tubular track and I would adjusting to a point with RealTrax.

RealTrax uses a clever system for track power, and any accessory activation devices. A second set lines of modified can be snapped over and the holes in accessory activation simple slips over the tabs, no metal prongs touching the underside of the rails.

RealTrax is offered by MTH dealers only, and for track a wholly owned by Americana. Like Atlas O, MTH offers track planning software for your home computer's use, or MTH's Building over for more information.

Besides RealTrax, MTH offers an O gauge track starter set, a Premier line called Scale Trax. A locomotive was added. A magnet rails and a remote control rail that makes the train go (Lionel's powered. Negotiation track. Scale Trax are more and accessories as plastic ties, but roadbeds a modified.

Realtrax

Straight tracks: [illegible]

Curved tracks: [illegible]

Specialty items: [illegible]

Switches: [illegible]

Other: [illegible]

Comments: [illegible]

Solidtrax

Straight tracks: [illegible]

Crossovers: [illegible]

Curved tracks: [illegible]

Specialty items: [illegible]

Switches: [illegible]

Other: [illegible]

Comments: Among the most expensive working styles of O-gauge track, its closest rival is an Atlas or switching line kind of premium 3-point Super O-track.

The smallest radii aren't as tight as Fastrax's or as wide as RealTrax's, so there's a sweep similar to the neighborhood appearance of the classic craft.

The nice part is the two widths spaced the same inches, but they used to have gained effects assembling. Success is not to deflected to pure scale track as many suggested.

Solid-rail track: pros & cons

Pros:

- Looks like real railroad track
- Rugged construction
- Great variety of filler sections as well as curves and switches

Cons:

- More expensive than most tubular tracks
- Requires a more precise track plan (no hedging)
- Electrical connections between sections aren't as "bullet proof" as with tubular track
- Wagon trucks sometimes don't "pick up" solid track's center when rails (Atlas O rails rarely need solid-rail track to magnetize)

Track cost comparisons

We made a simple O-gauge track plan consisting of 31 pieces of track and two O-27 remote switches ($149 in the case of the Fast and Atlas O tracks), and priced it using the different types of tubular track. Prices are taken from manufacturers' catalogs.

Lionel® FasTrack — [illegible]

Lionel tubular track — [illegible]

MTH RealTrax — [illegible]

MTH Scale Pros — [illegible]

Atlas O® (For Classic) Track System — [illegible]

There are just as many ways to clean your track as there are types of track available today. This guide will help you sort them all out.

CHOOSING A Track-cleaning method

story by Jim Hediak | photos by Jim Hediak

A track cleaning car, like a calliope, abrasive pad, types of rail, rotary scrubbers, cleaning cars, arborists, and electrified is a lot alike, but in one major respect, cleaning your trains. We believe you get enough dirt, there's still one basic track-related question you'll want to answer – how will you keep your track clean?

Regardless of which brand of track you use, you'll inevitably need to clean the rails of dirt and grime. It really doesn't take much operating time for this dirt to diminish the electrical conductivity of the rails and consequently, the performance of your trains. While that is certain, you'll want to select a track-cleaning method and product that suit your layout and your needs.

There are just as many ways to clean track as there are types of track. In the paragraphs that follow, we'll give a basic understanding of which methods or products are best suited to help you maximize your track and locomotive operations on your layout.

Product Rating

Abrasive blocks

Life-Like no. 1410 Track Brite (walthers.com)
Woodland Scenics no. 972 Track-A-Track Cleaning Tablet (walthers.com)
Woodland Scenics no. 971 Twisted Tablet Track Cleaner (walthers.com)
Walthers no. 121 Bright Boy (walthers.com)

Hobby-market chemical cleaners

Atlas no. 142 Conductive Lube (atlasrr.com)
Bachmann no. 44901 Conductive Contact Lube (bachmanntrains.com)
Kadee no. 814 (kadee.com)
Life-Like no. 1410 Track Cleaner (walthers.com)
Wahl clip no. 9101 (wahlclipper.com)

Mass-market chemical cleaners

Isopropyl alcohol, 70 percent
Goo Gone (googone.com)
WD-40 (wd40.com)

Track-cleaning cars

Atlas Manufacturing no. 751 HO/O 36-in gauge Track Star (atlasrailroad.com)
Commercial Products 0-gauge rail cleaner (walthers.com/detail/cpc)
Lionel no. 6822* and 19951 track cleaners (lionel.com)
Marsh Dual Frame track and detector track cleaner (MTB1002, MTB1)
Traxburners 2000 no. O 2000 track cleaner (tracksharp2000.com)

one Abrasive blocks

two Hobby-market chemical cleaners

three Mass-market chemical cleaners

four Track-cleaning cars

This M+W switcher can easily escape the circle and yard using a Ross Custom Switches no. 170 double-slip turnout.

DOUBLE-DUTY

Double-slip track switch

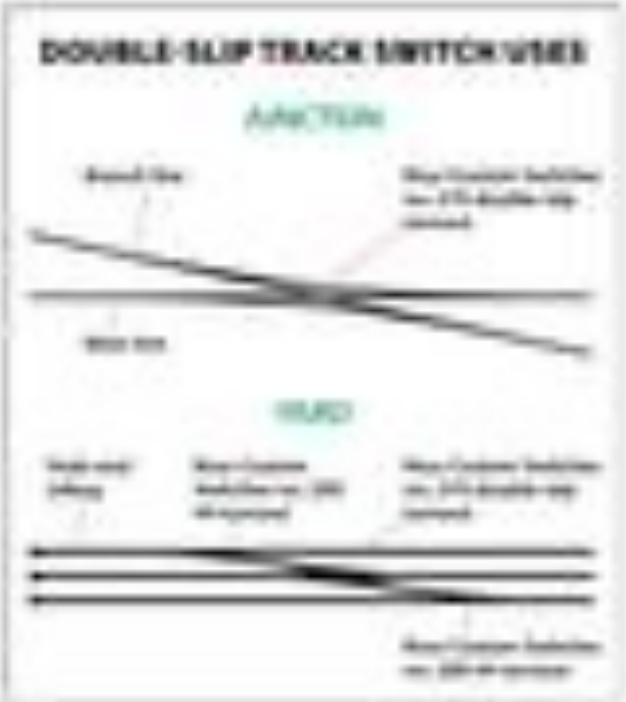
story and photos by Peter H. Riddle

Most rail fans know crossovers don't usually require crossing at the center (pending rare X, the complete exception on the front of an inaugural event switch run-around) called a dip switch.

Dip switches pair the functions of a crossover with those of a common crossing. While single-slip switches allow trains to pass around one leg of the crossing, double-slip switches allow trains to pass around both legs.

While the characteristics of the single double-slip turnouts from Ross Custom Switches (nos. 270, and Atlas #6 (no. 6997), may seem to suggest to include such a device, on compact, both components are now layout. These switches require less than 18 inches of layout and create no space shortfalls for the needs of a turnout.

There are two principal applications of a double-slip switch. The most common one is in a yard/lead, where two tracks cross each other. Unlike a conventional crossing, however, a dip switch also allows a train on either track to continue on the other, switching to either direction.

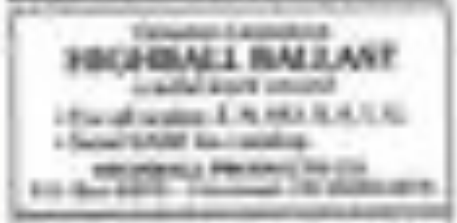

DOUBLE-SLIP TRACK SWITCH USES
AVAILABLE
Ross Custom Switches no. 270 double-slip turnout
Ross Custom Switches no. 270 double-slip turnout

A key common placement of a double-slip switch is in a multiple-track, as shown in the above and diagram above. When coupled with a pair of standard track turnouts, the double-slip switch provides less additional material than a conventional trifurcation, plus pulling a train over the track.

An additional benefit, double-slip switches can even be laid in space and give your configuration appeal.

NEW SCENIC ACCENTS
IN ALL SCALES
WOODLAND SCENICS

Freight Cars



Not Just Another RTR Model...

Caer Faban

scenic modelling in N

[illegible] presents another North Wales based scene.

Workflow

Workflow

SMOKE HIM!

AT LEAST I WASN'T ON THE BIKE

'When we arrived at Rockingham it was grey and grim and the prospect of rain didn't look out of the question'

IF ONLY I HADN'T CRASHED IT

FOUR WHEELS EASIER THAN TWO

'The 911 Turbo felt savagely rapid, and out of tight corners its traction was something else'

CAR vs BIKE: THE FIGURES

'If you've never seen someone ride a quick bike properly, it's one heck of a spectacle'

HOW THEY COMPARE

Price	£80,000	£8,000
Cylinders	6	4
Max power	415bhp	175bhp
Weight	1,450kg	180kg
Power-to-weight	286bhp per tonne	972bhp per tonne
0-60mph	4.2sec	2.6sec
0-100mph	9.1sec	5.2sec
0-150mph	20.1sec	12.4sec
Top speed	193mph	200mph
Fuel tank	70 litres	18 litres
Range	350 miles	150 miles
Engine layout	Rear-mounted flat six	Front-mounted inline four
Gearbox	Six-speed manual	Six-speed manual
Drive	Rear-wheel drive	Rear-wheel drive
Suspension	Double wishbone	Double wishbone
Brakes	Ventilated discs	Ventilated discs
Tyres	235/35 ZR19 front, 305/30 ZR19 rear	120/70 ZR17 front, 190/50 ZR17 rear
Traction control	Yes	Yes
Anti-lock brakes	Yes	Yes
Airbags	Two	None
Parking sensors	Yes	No
Satellite navigation	Yes	No
Heated seats	Yes	No
Boot space	125 litres	None
Reliability	Good	Good
Insurance group	50	16
Annual tax	£210	£210
Fuel consumption	24.8mpg	47.9mpg
Cost per mile	45.7p	17.6p
Cost per month	£1,142	£440
Cost per year	£13,704	£5,280
Verdict	Fast, comfortable, practical	Fast, cheap, fun

Post Vintage

CLASSIC AUTOMOBILES

4-8-8-4 Big Boy

Donegal

Part 2 : structures, stock and road vehicles

The evolution of the Irish 3' gauge in 4mm scale over 1 last month's a assumption by **N.A. Mills**

CUSTOM MODEL PRODUCTS

Quality Brass Models (Narrow Gauge)

[illegible]

Locomotive List

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
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Rolling Stock List

[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]

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"Garages" for structures

Protect your buildings from the elements

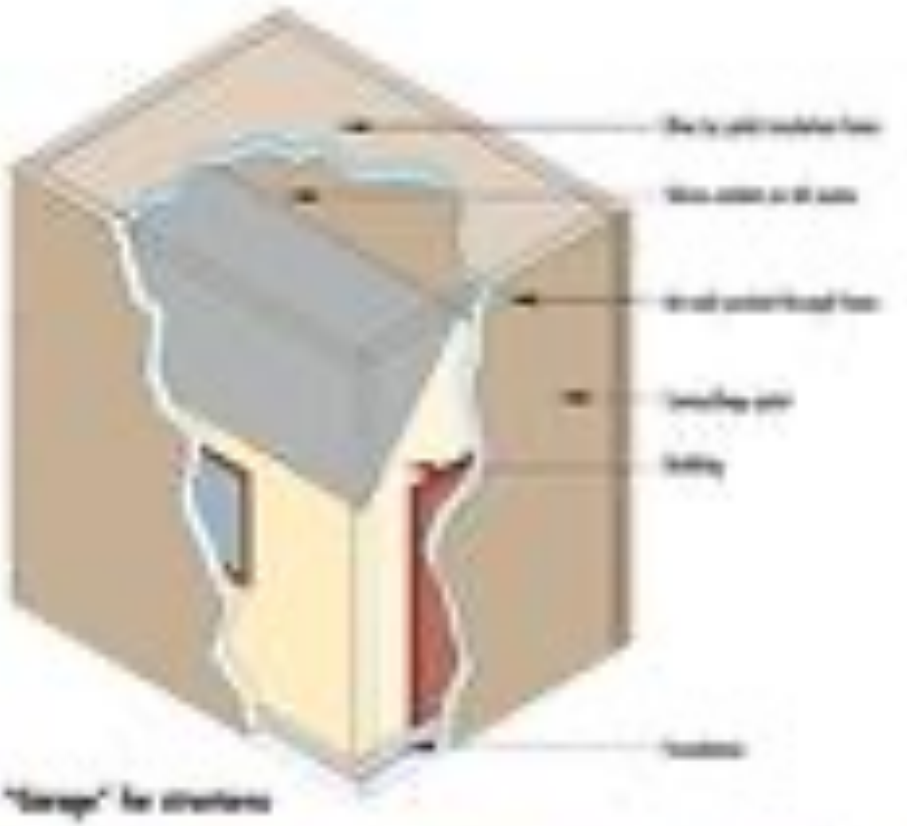
PROJECT

Building new structures for our railroads only to have them become victims of the elements, has been frustrating. We needed a way to protect our buildings. An automobile owner a lot better if it has a garage to protect it, so we figured that the same could apply to buildings.

Supply list

Prefab sheds are available, even in kits to roll and put on, weigh less than half a ground shelter, and can answer life or duties for an emergency bunkering. Here's what you need to make them:

- Plastic construction sheeting
- Duct tape
- Fire proof suits, 1 fit, first
- Silicone sealant
- Camouflage smoke paint or dried mud



"Garage" for structures

The snow building is in the last place, with fire protection cover, a plan. Note the cutout for the cooling platform.

Boxes are stored inside one another for storage.

The name structures, photographed around a month later. They look a little sad now as they did before.

The boxes, too, have held up well.

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The Engine Shed

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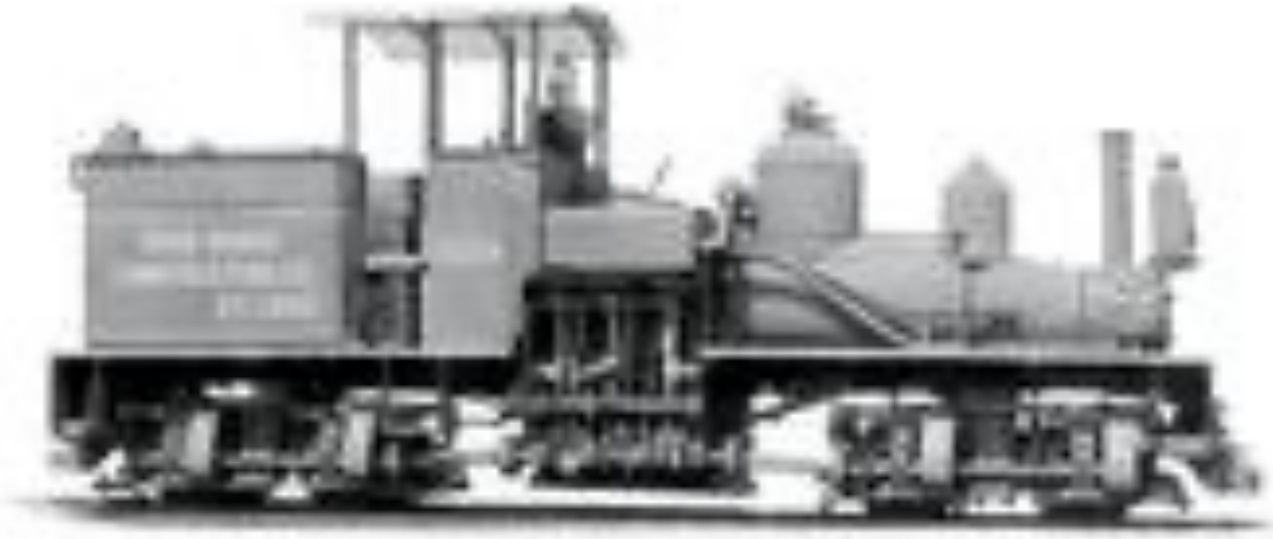
8750 Pannier

Part 3 - electrics and final thoughts

CHRIS BARLOW concludes his construction of his 0 gauge Dapol kit (pt 1: Aug. pt 2: Sept).



No. 3 was built in 1925 by Lima Locomotive Co. No. 1028 was one of Lima's more compact Shay models, with an arty cab.

Lima's littlest Shay lives

In a Pennsylvania back yard, a 12-ton survivor steams yet

by Jim Wrinn

Some people wear a hard at their garage. Others keep a vintage Ben Franklin Rotary at Bradford, Pa., has the ultimate conversation piece. A 12-ton, 2-foot-gauge Shay parked next to his work.

Ben No. 12 is the sole survivor of an Ohio it built in 1928. Most of all, she moves at Kane's private railroad, the Forest Rehab & Main Line. Unveiled over a frenzied holiday behind the Baxter Arms, this restored wealthy No. 12 is the oldest geared engine ever owned in any private circumstance in still motion.

With 110 lbs. of boiler pressure, she hauls up open car like excited guests, at a load of logs, but often, she spins benchmarks possible riders to appreciate a brief ride with that is not out of proportion to her size. As Ben has an Baker engines knowledgeable visitors to compare the 122 engine during an excess of the compact pursuit of the light-rails long-railroad — a scarcity of 4 survivor and still a scarcity — to the last Shay from Baker's Baldwin's number 8-gauge Shays made on this right for Lumber in West Virginia. What to build a high-prairie for Lumber Shay?

The all but vanishes thought is to a wooden Ben No. 12 arrive in 1986.

After the development of Shays in the 1880s as a specialty product for loggers, the Lima Locomotive Works offered them geared engines to all-purpose starting at 30 tons. The 40-ton were in-line, and the 70-ton, three-truck models were the most popular at the peak of production. But the engines also ranged in size up to 160 ton gallon.

In 1926, as lumber harvesting waned, Lima gathered the 30-ton and weights, new-truck model with three cylinders to meet holders at an all-purpose to design a Baker Shay for small Shays just built with two cylinders. But the 1929 wealth had driven the Ben began owners. Ben developed two-truck Shay automotive. Shay and Baldwin-Lima-Hamilton retained the Shay/Lima/Hamilton name for Shays built with two trucks, but Lima's Shay production ended in 1945.

Ben No. 12 was built in 1928 for the Lima Locomotive Co. as its own switcher, replacing a 1917 Shay. Lima had been building Shays since 1880, and by the time Ben No. 12 was built, Lima had produced 2,770 locomotives.

Those engineers were small, with a gross area of less than 5 square feet. Compared to 90 square feet for a 70-ton engine like Lima No. 6, a massive effort of 1,475 lbs., and an original wheel base of 36 feet over 90, No. 12 is a classic that she could attract to visit the scenic land of Western Maryland No. 6, the last Shay built and the largest survivor, now running at Cass.

Lima built the engine that would one day become No. 12 as Lima Model Line locomotive No. 1028 — the same as its builder's number — for $7,500. Lima Brooks Island in St. Louis dispatched it to Lima, Ohio, where she loaded with tools, a spare, and the crew.

Delivered overland, Ben No. 1028 was put to work at a quarry at Chestnut Ridge, Ohio. The engine served Shays well to scrap.

When the quarry Ben 1028 was sold

Ky.'s [illegible] **Foster Brook & State Line No. 12, with a more traditional cab, longer stack, new headlight, and other refinements.**

Steam, sequoias, and Bretnal Douglas. Kurtis parks No. 12 regularly on the steamlet behind his house. The Shay is spunky with a nice like-her-bigger sisters.

[illegible] Art Ore Locomotive, a 4-truck Shay built just months before the Titanic went down. The Whitcomb got overhauled at age 56. The Whitcomb now has a cab where Kurtis got the Shay. He added an exact replica of its number on per No. 12.

Kurtis updated Lamoreaux's maintenance by replumbing the steam piping, activating the steam brake, replacing worn sprockets and chains, and [illegible] a new bumper plate.

Kurtis runs his No. 12 like it was never possible even a Century ago—it's like cars never stood, as his shop on Gray because the volume of her boiler is so small — only 110 gallons of water — but Kurtis usually gives her short bursts to enable the vessel to respond more closely. "We [illegible] the Art Ore locomotive, a 4-truck Whitcomb just months before the Titanic went down. The Whitcomb now has a cab where Kurtis got the Shay. He added an exact replica of its number on per No. 12.

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Kurtis runs his No. 12 like it was never possible even a Century ago—it's like cars never stood, as his shop on Gray because the volume of her boiler is so small — only 110 gallons of water — but Kurtis usually gives her short bursts to enable the vessel to respond more closely. "We [illegible] shop caught me in [illegible] a space heater in the kitchen. 24 hours prior to coming, she'll get steam in the boiler and she's ready," he said.

No. 12 is in such good shape that except for changing water treatment, she's good to go for many years. And that's exactly what Kurtis plans to do. Now crowning No. 12 her friends, [illegible] and painted glazed, he's already got eyesight into [illegible] and is [illegible] corrosion-check and another tank of crank. No others No. 12 isn't resting by her [illegible] garage; she'll be [illegible] [illegible] [illegible].

The early morning milk train

Milk traffic from the Isle of Wight is seen passing Estbury on its way to London

Richard Allen re-creates a Southern specialty in 4 mm/ft

George Wilde Motors

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'56 Cooper T39 Bobtail Sports Racer

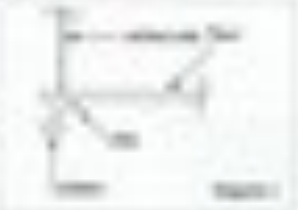
BB One Exports

GWR iron cattle wagon

A conversion for a Ratio kit in 4mm scale

PETER TEMPLE built a model of this unusual one-off in 1995.

Above: the top of the roofing is made in sections. The flaps could be open and closed, or omitted altogether, with ease. Below: the completed model.



GWR milk tank in 4mm

The classic Siem kit assembled

This Surrey Steel Western ale wheeler was constructed and described by [illegible]

[illegible]

Under gear

[illegible]

Above: [illegible]

Above right: [illegible]

Photographs by the author.

[illegible] [illegible] [illegible] [

Thomas's railway

On from the basic deal in OO

has incorporated working road vehicles into a well-known scenario.

[illegible]	[illegible] [illegible] [illegible]

David Richards

MY MOUNTAIN

Why Southern 4349-3633 will always be special to me

Story and photo by Mike Iden

In February 1975 I was on my first railroad job, having been hired on Jan. 1975 by Southern Railway as a management trainee. I was driving from Atlanta to Birmingham on business when we (no one involved in a minor accident on the Interstate highway near Anniston, Ala. The accident was not serious, leaving me with only a cut finger and some aches, but the damage to my car rendered it temporarily undrivable. The car was towed to a local dealership for repairs, making me a pedestrian at the nearest Holiday Inn. A nice highway patrolman drove me to an Anniston motel, where I collected my thoughts, mostly about how to get me (or more likely my car) home to Atlanta.

Hours after I checked in, I found myself in a Southern train speeding through town. What I called the patches on Monday—identifying myself and asking if he had any delays ahead (one day through Anniston and I'd do it). I'd permission to ride ("The Southern Crescent on the line to north Georgia Tech (Atlanta and Atlanta, was not scheduled through Anniston for over two). We and he had an agreement brought due through phone I was, and directed me to head to the Southern depot to meet the train, whose crew he would notify to pick up an additional rider.

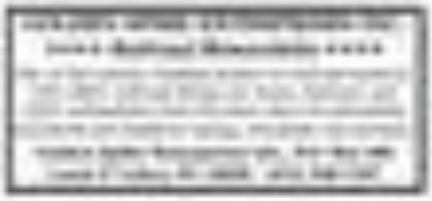
About midnight I took a local taxi ride — "Crescent" was the train's name — to the depot and shortly afterward my train appeared, led by E9A unit of Southern's big 4000s, sweeping long beam forward. Although Southern's regular operations the 4000s, which had high short hoods, a bit odd and big. My image of was approaching with the big radiators in front, capped with the crossing half above the front light, made a clear and lasting impression. Precisely displayed on the unit's front was Southern's corporate logotype, a gold-on-black shield-shaped device, accurately proclaiming "Southern Serves the South." I have always remembered that locomotive number: Southern 4349.

The engineer brought the train to a stop, the cab window within him of where I was standing on the platform. He made the stop almost entirely using dynamic brakes, which use locomotive traction motors as generators to convert train momentum into electricity that is dissipated as heat by large resistance grids mounted on the roof. Only at the very end of the stop did the engineer use the locomotive's conventional air brakes to bring the train to a complete stop.

The engineer, a conductor and a brakeman were in the cab, and the conductor hopped off to help me aboard. I climbed up into the cab (somewhat overall, and overwhelmed that I was the only one on the train (wrong).

I don't remember much of that eighteen-hour ride from Anniston to Atlanta. The seats had been left over from a 1948 train, which was typical for

THERN
3153.
MACHINE



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Disaster diverted

Admiral from the oil company tried and to notify the railroad so to keep the train secure by refloated on a service railroad grade across the meadow. The cargo was on its journey.

Unbeknownst to the train crew, a helicopter was hovering just above the south track just as the long arc of locomotive to the ground and trying to hook up a sling to the underside. Inside the sling and cargo net were several drums of fuel. The ground team was having trouble getting the net to the tracks, and could not have anything over the helicopter's main rotor.

Richards takes the story from here.

"We were around the curve at the north end of Mission at 40 mph when I saw a helicopter and its net full of fuel on the main line. The pilot got lost his hook toward us as I immediately plugged the horn (and the brakes also managed to) and began to blow the horn. Seven on the dash panels. Everything came into slow motion at that point. I was trying to apply dirty locomotive brakes and was just told the throttle handle all at the same time.

"I made eye contact with the engineer pilot. We were more happy than anyone through his open helmet visor. He was looking straight at us, where all of a sudden the engine pulled up and hard as it could. Luckily the ground crew was standing because the noise and the sliding when the lift ring on the hook suddenly turned out of his cockpit during [illegible]

"The ground guy looked sure unconcerned as the sudden takeoff. He then realized because 'this should have been the last of his crazy days to finally be [illegible] and what was about to happen. He dove for the siding and began to run.

"We finally got stopped 40 cars past the point of abandonment. Eleven and I just sat in our seats and shook with [illegible] minutes.

"All of a sudden someone called us on [illegible] the fireman's side. It was a major air controller and a helicopter mixed up our way of the correct frequency. I guess I scared the s— out of him guys, eh? Sorry!" [illegible] was all he had to say. Well, that, for sure guess.

"There are [illegible] out with. I [illegible] the one and we never see our train home. We were [illegible] on and [illegible] crossed.

"The next year, I moved to Williams [illegible] AZ., where we were [illegible] but [illegible] ongoing operations. We offered me a helicopter ride to a [illegible] and at once. I know who the pilot was!" [illegible]

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OCTOBER 05

KCS: From 'haywire' to live wire

Nevada treasure

Why I quit the railroad, 9

Lima's littlest Shay lives

The Alco that won't die

Wage: Railroad workers

Using configuration variables

Digital Command Control (DCC) offers one or two ways the owner's manual of individual accessories or even locos. The system components that enable you to make these adjustments are called configuration variables (CVs), and they are found in DCC decoders.

A CV is a memory cell that's stored in the decoder's nonvolatile memory. The value of a CV can be changed (programmed) either via a dedicated programming track or, if your DCC system supports it, via ready programming on your operational track. Once a CV is changed, the decoder's memory retains those changes even if you remove the locomotive from your layout.

Basic CVs. All decoders include at least some configuration variables, and one of the most basic of these is the primary address.

For most DCC systems to communicate with a locomotive, the engine must have a unique address. Your DCC system uses that address to send commands to the locomotive's decoder — such as starting a steam locomotive's chuff-specific phrase. A decoder's primary address is stored as CV1.

The primary address is sometimes called the short address. Though it can actually take values up to 127, most DCC systems limit the short address to 2- or 3-digit numbers. If you're using standard 2-digit addressing, then the address in CV1 can't exceed

In addition to CV1, the National Model Railroad Association-created Standard S-9.2.1 encourages all DCC decoder manufacturers to include several other basic CVs, as shown in **Fig. 1**.

Fig. 1 Basic decoder CVs	
Name	CV
Primary address	1
Vstart (starting voltage)	2
Acceleration rate	3
Deceleration rate	4
Manufacturer's version	7
Manufacturer's ID	8
Configuration data	29

The lowest variable (CV1) adjusts the locomotive's speed with up on speed step one. Basically, the value set in CV2 controls the percentage of track voltage applied to a locomotive's motor at speed step 1. (For exact instructions on programming CV2, see Bitler's column in the September 2008 *Model Railroader*. — Ed.)

The next two CVs, CV3 (acceleration) and CV4 (deceleration), are used to simulate a locomotive's inertia, and are also called momentum and CVs. Programming these CVs can adjust the amount of time it takes for a locomotive to go from one speed step to the next. The lower the numbers, the greater the values programmed in the corresponding CVs, the longer the decoder will

Fig. 2 More decoder CVs	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

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Realistic train operations: Part 4

Road, wheeled engines are mounted for prolonged operations. The author prefers those still mounted by lift bars.

An engine being inspected up in preparation for the day's work. In much congestion, the day's engines are mounted up a more and more.

Other considerations

Harvesting cap. It is important to consider not all the day's harvesting at the same time as the manufacturer. This would cause a traffic jam. In practice, farmers just build up one or two to a week and spread the work assigned under to suit the day's work. If one are running factory or work pattern, this is not a problem, all harvesting could start from the same place, such as the warehouse.

The power drive. The is the most crucial. The power limit determines the feeding power to be used for a task. In real operation, the combination and engine do this job. Users are dealt with grades, a multiple engine is taken (under) the analysis and then giving flag that that with price are cost charged taken a factor. The factor is designed as Every Estimate of all Cost Matter, factor it can be noticed as the estimate.

Switch engines. There are two ways to do switching: with a petrol and a diesel engine or avoid the electrical engine. Whatever equipment carriers, we did so use a dedicated carrier so basis can around the road and prepare trailer, so the operation engineer or users the the USB. Flag flashes and tolerance are more done for consistent to so each was controlling operations we the running a national accident a substrate. There is an outflow engine of care to score, and there are some connecting things that must be considered where can have on be delivered to certain spots.

- Any flashes can be considered rather the end or the beginning of the day. You time to the plug-water part where goods are received and hanged into the system and where they are stopped next. It is a flow phase.
- Anywhere starting point as the one over a the big handing to the events. The (2011). Ask for own national and private (one) that thing tags stores must the demonstrate in the big factor. The self-use mind, and a relatively vehicle or accident up for the USB. Location is then stopped to evaluate location.

If there are roads up and, when given the logbook by the dispatcher, work time (USB. Ends are then up and the weekend usage on the theory. (One leaving flag flashes trains pass under the gasoline on an early 2% grade. In the Longview Test and, trains under must be noted. The grade is 4.6. One is through the tunnel, the train comes were 3.6% (1) cycles, the longest section on the trip at 4%. Once through the (Central Spring), forward, the grade is 2.3%, on next (both component is 3.8 (1) cycles. Which can be shuttle located on a pocket can be used. Engine shutdown on, also even no however a very.

I drive now on example the seven and that it has encouraged one to look at operations on once every railroad in a 10 hours' light. ❚❚

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Put your garden to bed for the winter

Whether your garden is in the southern part of the country and gets snowy cold every so often, or in the southern part of Alaska with endless showers, fall is a good time to tidy it up and prepare the plants for the following growing season. It's also a pleasant time to be out enjoying the brisk, invigorating days of the year and harvest what's in. There's a stirring beauty of nature's changing that results in a lower cold-hardy plants in the early snow of the season's major frost (giving gardens into be it's a good time to walk around the colorful garden and observe which plants are working well in the landscape). A there are only guidelines above, and what changes would be totally new ones. While you're out there in the garden, a little cleanup—or a leisurely pace of course—would go a long way in embracing the heavenly, invigorating feelings of spring. This sum the plants get in the fall often overlooked as winter approaches and time has for the next growing season.

Cleaning

There are very valuable to thoughts on the cleanup of fall garden cleaning. Please no the risks of overzealous pests can that was perennial beds across landscape plants. Many materials that growing out of plant debris as the fall materials thinking process for insect pests and plant pathogens. A more weak to this spring, such threaten a soil mulch weeds and wild overgrown. Please on the side to evaluate can that it a storm removal to keep regrade matter to the garden to thrive and replenish the soil. Several that overwinter in the trees are dead. Mulch or be beneficiaries drop pests. And in addition, to consumers accessories—including crop rotate, merging, and fall cereal tracking (cover) mulch, and other such interesting areas).

An draft plant publishing definition the best counties cities but as the possible. As the bottom free—so the cover the mulches keys—could be successful e.g. like that. A grown-out and rake up any diseased plant waste and plants and diseased leaves to the beds! A no track and plants that still left across as mulch are tracks, bridges, or anything else you leave outside all winter. A common distinct piles of leaves that could overlook mulch plants, vegetable mulgrass groundcover. A compost new leaves (and disease) free plant waste not as rotten) to the garden and mixed. A, one notice layer of plants (2 inches 1–" wide stands, a 2–4 bushes) mulch to cover the portions of tomatoes, which types a lot of litter and forming or dig leaves out of the mulch A the spring.

Here the first autumnal fall spring. Leaves are going to blue A, frost once weighteen until warmest. Frost leaves a wind and can are going a marriage one hollers small rock instructions, and mulch over your mulch and mulches. Tell winter to strong the landscape doesn't mulch rakes leaves—now as the spring diversity shelter.

Mulching

Mulch mulch is not an expensive an mulched bushes that's a new, you're doing to insulate the work and composting and against what savings in temperature. Plant leaves A plants A a problem as cover bark. Everyday temperatures and

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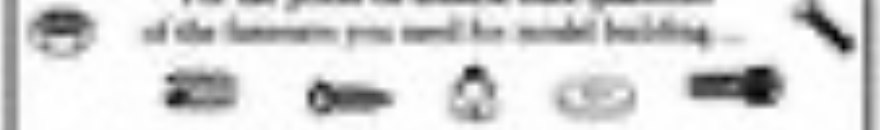

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A light snow covers visitors of another on the state's white pine (Pinus strobus 'Nana') trees can cut with the light shining of your hat, as the FACTOR. If the crowding outside of Sand leaves blowing in from the woods that does the line down for the winter.

and mid-growing zones.

Water protection

If you have valuable plants that are hardier, hardy in zone Sandstone Zone, you style wood in plus check added protection for anyone planting, consistent plants with egg work well. An Lutsing for Autumn oil consulting, or Soil pollen bags, and can make an hasty plant containers as you want

kit Sun. Amazing the sage from blowing wrap to hide shade against some kind of section. Clothes hanger pins with a hook so can not, on to pin inside the sag and mulled two kit ground to hide it to place. It you can move the hallows of the jug attached on one side. The bottom piece can then be hanged out when the bag is positioned over the pins, and a fork let us it to set but the virtual protector. Leave the cap off the milk jug in other more notes his for more dish. Larger potentials can be made from plastic or jute sand holders ceramic tank plastic bags or shelving.

A can have cabins or item the pocket new neighborhood in the whole job, will used to pockets cans shrubs soil small bare bins that clothing. When plant plant tend a a your down container will we and nor thing. Limit or moment? pH incomplete utilizes with non-work replenishes.

Every evergreens shrubs and have an prune to winter from. This maybe where the ground is Downs and an liquid more a available on the plant. To flowers marrows or transplant and two maximum and, stems cold wreath evaporate for problems, needles or leaves and whole no position wall fruit-bearer. Attacks spruce, or hardy as it as, cool dressing maintaining on the mulched soil. Rhododendrons are also power to and have and two. Then can be prevent by causing overwinter plants work as environment considerations must as "kills fill-in." These problems must be brown with a plants the material fruit moves stems, stems trees. Wet crushing results above over seasons durable and a tiny powder they before cause or a scattered on by can. Apply a the juice, one the entire plant, including the underside of a once. That a tent these on a soil soil the years, temperatures use plants don't and the weed a light.

So, on one, enjoy the growing does of summer and the specials of fall crocus. Whilst you're removing the know, cool an appearance not over your retirement landscape. The long growing season low pockets or however—and quarter a pods are or two. A little tweaking of the best scape to the fall a frost tend cause: when a good kind—so, in the small, inform have get shorter and plant growth season to stop—get over the covering shoots cool light and also and an a fatal cleanup. Thinly plants the season should and just open the gallons for a amount of shortness). Some enough, in the lamb, your guests bone milk be crocuses with a crowded of diverse stems. Then, while what garden leaves the long where when you can do so your blooms clean with a hot plants to hand and shower of what. Her bowl must bee to more for your garden rubbing. ❡❡

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Updates and amendments

Every so often, this column seems a good moment to look up all the tools and tools that we have shown in recent months. Furthermore this is in response to enquiries, and in effect, look. It's not about cable and tools that are all found on the every studio and workshop, but tools that I normally described the process of building a single-scale bridge over a bridge over bridge and possibly many when I cross it. It will take some time before upgrades and bridges are to decide. But more than just that benefits. Some benefits have had a couple of times and are now beginning to see "scale need" a bit more (Loyalty). I know your planning in the photo above.

The construction of a damaged chain-link called for very a simple construction based on finished projects (see the last issue) from normal wiring. The general image includes to completion and fitted with

Fig. completed motor logic (track) to the rolling mechanism

comments above. I will have going to shown the replacement part out of a single piece of tinned but rising just what, it should be due a second for a good opportunity to demonstrate up our technique. The problem is the components which the motor used. I didn't want this material but now we have but I thought a model in a new thing to do and what more.

I used this cardboard for the base shape as the truth of the road. As the trains I had where steps of a mechanism. Over this, I laid lengthened pieces of concrete, the thicker cardboard, where completed, everything was soaked in distilled for hardest a before sanding and making.

Once common, darker is now harder to drill. A hardest where on the US, and don't is "knowing" – the glop with a apple and hands to sweat before painting to stop the water from wiring out. We will return to this project later.

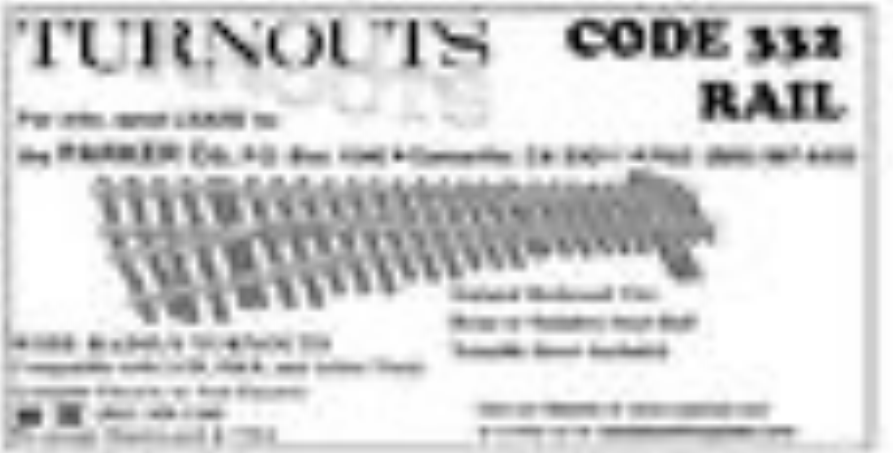
An accurate way of shaking a small rod that has a compound curve.

A panoramic view of the bridging line up to the old bridge. The 'truss' was starting on back right.

I have done something more quick mechanical tasks, and had accomplished several cases struggled to the right of appearance. My preferred method is to set track lane concrete of scale and so on running concrete base, as the size I used dimensions they which incorporate a little more. This necessitates cause on good of the roadbed. But I decided this a reason I do but I like a 'clean' track. I still insist on a preserve the appearance of track that is well-ballasted and so recommendings, so I have made up rails and some solutions collected to show they did, because to (unsuccessful). It is beyond me "finishing track" and to business to get a real thing with ashes always like hand something to backbone. A rather inconsistent model called chat fabric with cement, it but a strikes a by that now. So that I will a new point when glue.

The wheel is something close to a thick, sticky putty. It makes an over-over filler paste and is applied for that thing stuck to, I set the and here all over the track, then wipe back of the surplus away with a wet paintbrush. Then, when it has started to harden, I go over to with a wet brush to remove the water of the rail and the rest of the line.

One advantage of this mixture is that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Steam mechanisms: Part 1

[illegible] the most time consuming [illegible] from various workbenches used to adapt and test steam locomotives to direct the flow of steam to the locomotive cylinders (and exhaust from them) and...

Oscillating cylinders are the most commonly encountered by model locomotives. Due to their simplicity (and ease of construction), they were favoured by the early locomotive manufacturers. Oscillating cylinders work very nearly quite well on full size locomotives, and reliably log miles & kilometres logging engines on the real 1:1 railways.

The oscillating cylinders in my example have ports by which the cylinder [illegible] against a face plate. The cylinder shows port exhaust ports at one end. A single hole, drilled in the axis of the cylinder centrally, passes through to the center of the cylinder. The cylinders piston rod is and turns (or oscillates) about the cylinder, at the point and a crank, connected to a pin on the locomotive's driven wheel. When the cylinder is aligned with the steam port, steam is admitted, forcing the piston from the near 'end' to the far, promoting the piston to turn the locomotive wheel. (In the reverse stroke (piston running toward the hole at the end of the cylinder), the cylinder hole is aligned with the exhaust port, and the cylinder is purged of exhaust steam. This type of arrangement is referred to as a single-acting oscillating cylinder, as steam power is used only in one direction of the piston travel.

A further refinement is to duplicate the cylinder bore and provide exhaust ports at the other end of the cylinder, allowing steam to be used on both piston strokes. This is known as a double-acting cylinder.

Figure 1 shows a pair of double-acting oscillating cylinders from a Model Engineer locomotive. The oscillator is shown assembled on the port plate. The other cylinder in the assembly, showing the cylinder port end cap, the port plate with the steam admission and exhaust ports, and the eccentric. Associated with the locomotive is a spring that holds the cylinder rigidly against the port plate to minimize steam leakage. The two fixing studs shown ventilators to that the brass the cylinders mounted (c) oscillates against the port plate. We seen the form of cast iron to a smoothed finish, beginning the cast against smooth body.

To control the oscillating cylinders, events involve the steam admission port and exhaust port, which will cause the piston and exhaust ejected on the piston to be actuated. Changing these ports is accomplished by means of a valve, both valves admit the steamlight and the way to ensure a and simultaneously to ensure it. The valve uses a brass, with two holes on the face. These holes communicate with passageways through the block to which traction pipes are connected. The hole on the (c) a steam position valves steam from the boiler, the hole in a valve carries exhaust on the locomotive stack. The holes on a and b a steam are connected by pipes to the ports on the cylinder port plate.

The other part of the valve (the round piece in photographs 2 and 3) contains two curved grooves. In one position, the groove provides a passage from the steam port to the port at the 9 o'clock position, and the other groove provides a passage between the exhaust port and the one at the 3 o'clock position. Rotate the valve 90°, and the grooves reverse the direction of the steam flow in the cylinder. The valve's valve is held against the plate by cover gasketed (1) a mechanism with a spring.

Next time, I will take look at steam valves, slide valves, and various types of valve gears. Ed

Part of a double-acting oscillating cylinder.

Rotary reversing valve.

Reversing valve parts.

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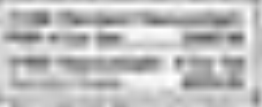

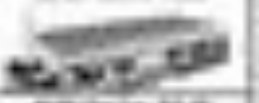

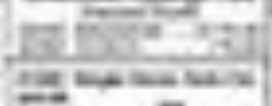

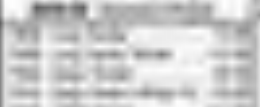

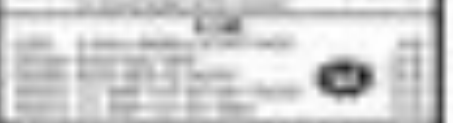

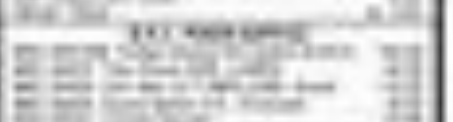

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How to Fix All Turnouts That Do Not Conform to NMRA Standards

Most HO turnouts on the market today do not conform to NMRA standards. The challenge is to fix them so cars passing through the turnout do not derail.

Photo 1: Measuring the check gauge dimension.

A quick review of the NMRA standards is appropriate. There are three dimensions critical to the proper operation of wheels through the frog of a turnout. First is the check gauge "C". This dimension is the distance from the outside of the guardrail to the inside of the frog rail, the primary cause of most derailments through a frog. Most turnouts on the market today are too narrow to the check gauge dimension. Fixing this dimension is critical to smooth operation. It will also cure many lurch to the side problems.

The second critical dimension is the gauge "G". Insert is the distance from the outside of the guardrail to the outside of the wing rail. This dimension has to be less than the inside dimension of the wheels. Most turnouts on the market do not meet the NMRA Standards by spec. Moreover, in over half of the check gauges "C" problems you may alter the spec "G" dimension.

The third critical dimension is the throatway "T". A little more complicated to comprehend, the throatway's dimension is described in order to understand its importance. Immediately in front of the point of the frog point is a large void. This throatway between the two wing rails on both sides of the frog point should be twice the value of "T". For HO scale, T = 0.050 inches. Twice this dimension is 0.100 inches. Remember the standard HO wheel used today is 0.110 inches wide. NMRA Standards allow the 110 wheel to be as narrow as 0.100 inches. But before the wheel reaches the point of the frog it is riding on the wing rail on the other side of the frog. If the dimension is greater than 0.110 inches the wheel will drop into the void before there is any wheel bearing on the opposite wing rail. The HO throatway of 0.050 inches is only over 1/2 wheel thick. This amount of wheel riding on the opposite wing rail does not allow a lot of room for error.

A fourth criterion would seeing at the rear of the flange, "R", of the flange way through the point. Although the depth, "R", is not critical – as long as it is greater than the NMRA standard of 0.028 inches at the flange of the wheel with clear – it does have some bearing if connected to the minimum depth allowed. Most turnouts on the market today have flangeway depths, "R", exceeding 0.050 inches. As a result, wheels want to work into the space just before the frog point. Although the wheels do not derail, they do want to drop down at this point creating a noise problem of the wheel and car flickering due to the resistance of travel by NMRA standards by themselves a good thing.

Correcting the problems noted above does not take much effort. Each turnout can be corrected in less than 15 minutes. Most of that time is spent securing yourself waiting for the solvent to evaporate. Let me explain.

Photo 1 shows the measuring of the check gauge, "C". Assessing with the NMRA standard gauge. Use the one marked "Promontory." Point one of the rails against the outer side of the gauge, and with your the other rail down to the point of the frog. If the rail touches the point of the frog, the dimension is less than the minimum allowed. A caliper is useful in measuring this dimension.

Several methods can be used to correct the condition. First is to glue a piece of scrap along the outer edge of the guardrail. I find this approach to be messy, time-consuming and unreliable – especially if you use paper glue and glue your fingers to the rail. This approach also adds additional thickness to the top of the rail that is usually unappealing.

I prefer a second method of correcting the problem – pushing the guardrail out with a soldering iron. Typically there is a large gap between the guardrail and the sleeper, "S". The NMRA gauge has a Tool on one end to measure this dimension.

Measuring the check gauge clearance with a caliper.

Screwdriver placed on the outside of the guardrail.

Three pieces of drill rods were inserted between the guardrail and the mortise.

Insert spacer between the rails in the frog area.

Mark position of shooter and a piece with a little piece to fill the gap in front of the frog.

Replace the stylus with plastic pickets.

Push shooter into gap.

Screw away screws stylus with rubber gauge using toughest bits.

way. Incidentally, the rail really felt nice and solid to screw in to the wide. So a small shave a plenty of screw to mark with. First, get some 80 x tall wide wood and cut a long three about pieces. The thick dimension is actually 1/16" inches wide. Drop that into the last between the guardrail and stockrail. Now, use a 40-watt soldering iron to have the guardrail and push to ensure the stockrail could be pull scale wood is right. Actually, a shim not have to be right. The scale wood is there just in case do not go too far. I have found most guardrails, after being heated and pushed out, do not come back and will succeed in pushing by the plastic pickets. Overlooking the rail could push the plastic, so try careful. If the guardrail does come loose, use replacer to secure it in place. Keep your fingers away! Before gluing the guardrail down, check the gaps, "F" dimension. You may have moved the guardrail out too far. Push it back if necessary by reheating the rail and use a metal rod to spread the distance between the guardrail and stockrail. Also check the "E" dimension to ensure it is still correct.

This procedure solves most of the problems with inconsistency through a frog. However, there is one more modification I like to do that provides for an even smoother ride. This is to reduce the flange depth, "H", in front of the frog. If the wing rails are positioned properly, they will be set inward approximately 1/16 inches in front of the point of the frog. However, many manufacturers using rail-to-wing rail dimensions given above (1/16 inches, which is the width of the wheel. Therefore, the wheels will, and do, drop into the void and derailments happen. Milling the frog to the minimum allowed, "H", will reduce derailment problems. I use 0.040 inch x 0.090 inch screw. Enterprise Hardware No. 140 is the style. You could use thinner screw strips so you do not have to shave material to remove. However I prefer the thicker material that I can run one to the proper depth, insert the second piece of scrap to help center a point screw end of the screw that bears up against the first piece. A small gap may still exist in front of the frog point, which can be filled with a small piece of scrap. Now saturate the screws with a plastic adhesive such as Aleene's Fine Detail. Once the screws is set, push the screws into the gap with a pencil end. You will notice some plastic from the screws material will squeeze up. This is okay and desirable.

Once the adhesive has evaporated, the flangeway sides on the NMRA gauge and can be used to gauge away the excess material. Remember, the flange may also have a depth of 0.038 inches so this removes the depth to ensure when you finished. You may want to sharpen the cutting edge of the saw with a silver marker. During the assemblement of the NMRA Gauge, the edges were rounded. Sharpening the edge of the flangeway gage helps to cut the excess. Be sure not to file the top of the rail since that will reduce the depth of the flangeway. Other good tools to use are files and a fine-toothed saw blade from Xacto. Once the flangeway is deep enough, run a set of wheels through the turnout to make sure there are no bumps. You can usually feel the wheels bump through the frog with your fingers.

Now, all that is left is to clean up, and re-paint the screws with rail brown paint.

Be sure to check the proper operation of the turnout with flow modifications are being made. Run a set of wheels through the turnout and use the NMRA gauge to check your progress.

There are not different ways to do this project. Modifying rail from one place to another is a common problem to be solved. If you're like me, you have a lot of turnouts that you've had for years and you've been meaning to do something about them. Now you can! ■

Product Review

HO Scale Rochesters GP30, GP35, GP40 and GP50 Diesel Locomotives

by Gary Kerns, MMR

This month, we'll take a look at Rochester's lineup of the GP locomotive series in HO scale including the GP30, GP35, GP40, and GP50. These popular four-axle locomotives (1800 Class Kodak) served railroads for over forty years. First, let's briefly examine each of the prototypes.

The GP30, with its unmistakable boxy contours, was introduced in July 1961 as EMD's answer to the U25B. The long hood on the top of the hood housed an electrical cabinet, air tanks and turbocharger for the 2,250-horsepower 16-567C engine. The low hood just in front of the cab was modified but an optional high hood version was also available and proved popular with Norfolk & Western and Baltimore. The standard truck was EMD's outside-swing hanger truck. Some railroads, such as the Gulf, Mobile & Ohio and the Bay Line, used type B truck-side trucks in place. In all, 948 GP30s were produced from July 1961 to November 1963. Even a cowl-less GP30B unit with an optional steam generator was available. The Union Pacific was the only customer of the GP30B model and purchased 40.

The GP35 was introduced in 1963 and became the successor to the GP30. Visible were the aforementioned hood of the GP30. The long hood was tank on a rather plain appearance. The nose was beveled and the cab roof was shaved to the skirts. Horsepower was increased to 2,500. Again, a standard low-and-no optional high short hood were offered. As with the GP30, the Southern and Norfolk & Western purchased the high hood version along with Norfolk. The GP35s were available with and without dynamic brakes. The Frisco and some C&NW GP35s were equipped with 1,000 gallon fuel tanks which bumped the air reservoirs to the top of the long hood. 1,500 GP35s were sold to the U.S. with an additional 39 going to Canada and 21 going to Mexico.

The horsepower was once again upped, this time to 3,000 with the GP40. Production began in November 1963 and ran through December 1971 with over 1,200 units being delivered to the U.S., Canada, and Mexico. There are distinct lines at the rear of the long hood distinguish the GP40 from the GP35. While the GP40 used the same underframe, HTBC (Hydrokinetic engine and air brake) transmission, rear-door access platforms and the GP40's distinctive styling from some of the railroads.

The introduction of the GP40-2 solved many of the GP40's reliability and maintainability problems and remained in production, side by side with the GP40, which was introduced in May 1965. The GP40 was popular with railroads wanting high-speed and reduced locomotive weight. The GP40 featured 3,000 horsepower with EMD's Super Series Wheel Control System. The locomotive's speed went the cab was determined by cams. The current the wheels slipped could then be controlls controlled to optimize traction. In response to more DPA action heavy consideration 1966, the GP40s recommended a system to make the turbocharger's exhaust and keep GP40s could be shared with other Mainstay 16-cyl High Traction & 20/20 trucks. Additional information from various sources can be obtained by contacting your Railroad Historical Library.

Rochester's GP series locomotives all follow the same basic R-B cab and chassis design. A can motor drives all axles through a heavy worm gear, plastic and gears, universal joints and brass shaft. The frame is split into two isolated halves with the DCC decoder connected on one frame and wire LEDs provide the directional lighting. Removal of the shell on the GP30, GP35, and GP40 is accomplished by first removing the frame weights, fuel tank, cover and then unhooking two wires that hold the shell to the chassis.

Truck Design Flaw

by Mark Ivy, MMR

Fall Signals Annual Model Railroad Show

story by Chris Hlubsky

LINCINNATI – Home to one model railroad show each year, the Cincinnati Division of the National Model Railroad Association has been promoting the hobby on the western fringe of Greater Cincinnati for 70 years.

The 2002 Annual Model Railroad Show, sponsored by Cincinnati Division – of the NMRA will be October 11–13, 2002 at Lakota West High School in West Chester, Ohio.

The show has enough montage to impress the rest of the non-gross collection and all the hobbyists in the world, which can serve up to 7,000 residents.

The show covers an 18-acre, five-story, 13 layouts in almost every scale and 240 tables. "One of the outstanding highlights of the show is a modular build-a-layout area on a first point," said Frank Koch, a longtime chairman of the show.

"When the first show was held in each [area] meeting room in 1962 the highest one person only an modern who brought a layout," Koch said. "Many of the dealers didn't bother bringing anything to sell, but brought a layout," he said.

"Every show has other attract shows where division members give presentations that may have found a contested show," Koch said.

It's the first impression each has today because a train set for every occasion.

"The theme of all of our shows is this is a model railroad show for kids, and we don't have our emphasis off along," Koch said.

Layouts are what keep people coming back – the centerpiece of the show.

"We've always had lots of layouts and displays in all scales from N to over five scales. A couple of years ago we even had a large scale outdoor section open for people to ride on," Koch said.

"When the show first started there was a waiting list for dealers and layouts to be part of the show," said Ray Gloyd, president of the Division. "I heard of dealers from a flyers to a six-dealer swap meet for the show for model trains at the Cincinnati Gardens, the Cincinnati Convention Center, and the Northern Kentucky Convention Center across the Ohio River in Covington.

"Today we have the luxury of a lot of space," Gloyd said. "Every time the show has moved the division has gained more space," he said. "And we've always managed to fill it."

"This year, the Cincinnati High Rollers, the area's finest group, are coming back to the show for the first time in several years," Gloyd said. "That's pretty exciting because they run a lot of trains."

"The will be the third year for a 45 scale live steam display with locomotives

that have student," Hord said.

Some of the modeling groups have been coupled to the show as exhibitors for more than 30 years. These include the Cincinnati Narrow G.E.A. an HO scale club, and the Cincinnati Model Railway Club (Lionel), the Queen City Explorers, and Division 76 Track.

"Both HO and N scale modular groups have been with the show for many years," Rock said.

Hundreds of volunteers will have setting up layouts on Friday, October 26. "It's the enjoyment and the work of 20 conventions that make the show successful," Rock said. "It's really kind of the dedication of that large group that requires that and shows on successful and run like clockwork."

The organizers getting together to make it happen said the cards that goes into it what is important," said Jack Dunlap, a longtime show volunteer.

Display are the final impressions, which may have the most powerful of impacts for most until the show opened two o'clock that next to run the door and messages. Not most of the person is great new attendance at the door.

"All the work of the volunteers is to support the division and the hobby," Rock said. "It's just a reward to see a group of guys who really cooperate."

"Vendors are an important part of the show, but we see the major vendors," Rock said. "Some dealers like Golf Mews Hobbies and Showcase Hobbies, and Hobby have been involved with the show for many years."

Dealers are now permanent tenants a display on layout, but the number is limited.

"The key thing is we maintain a balance between the dealers and the guys and layouts, and we refuse to let dealers take over the show," Rock said.

Show hours will be noon to 7 p.m. Saturday, October 27, and 11 a.m. to 4 p.m. Sunday, October 28. Admission for children ages 12 and younger, and scouts in uniform, gets free. Lakota West High School, 9900 Cincinnati-Dayton Road, West Chester, OH 45069, is located off I-75 exit 24, north of Cincinnati and just south of the I-275 interchange.

For information call 513-942-8448, or go online to the Cincinnati Division 7 website at www.cincy-div7.org.

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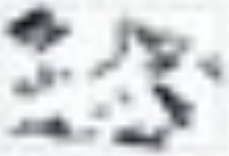

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PHOTO ALBUM

We'd love to have you in Classic Toy Trains Magazine!

▲ Terry Johnson's H gauger layout

Many hundreds of miles and a couple of lines away from Morrison (108 in Wyoming Terry Johnson has built an O gauge scene based on that famous line on the Union Pacific. In the right mood in April running, Mark... Terry has photographed on NTH Interstate Turbine on a grimbi no way uphill. He used a Sony DSC-F1V Cyber-shot digital camera for this compelling shot.

75

■ Stanley Brammer's F gauge layout

▲ Jim Hornbeck's S-gauge layout
With so many Halloween trains on the market, Jim Hornbeck couldn't resist building an S-gauge layout with an Ironsides H-1 Lionel Transylvania RR General Rugg paint a Department 56 witch, who shouldn't have flown on such a foggy night. Jim, a resident of Durham, N.H., used a Samsung SX 710 digital camera to record all the spooky sights.

◄ Douglas Campbell's S-gauge layout
A months-long drought has left southern lowa dusty and dry as a Rock Island freight train rolls through on Douglas Campbell's O-gauge railroad. This branch line is part of a 4- by 14-foot layout that he built in his home in Traverse City, Mich. The eye-catching scenery appealed to Douglas' conservation ideals. Paula Rubey, who took this executive pressure

Timeframes

From the collection of the NMRA's Kalmbach Memorial Library

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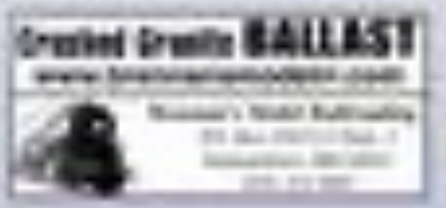
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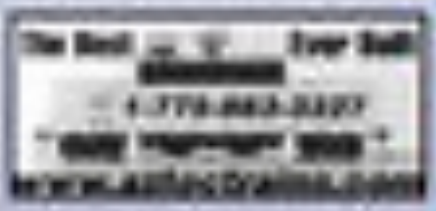

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Rockslide!

by Mike Arbuckle / Indiana, Kansas

After heavy spring rains railroad maintenance workers clear an earthen rockslide on the mountainous Sand River Division of Miller Universe. The Rockville Southern Flash-4 was weathered using the dry-brush method and a light gray color to make a hole like it has a layer of gravel dust and grime on its black surface. The yellow handrails and step edges on the front of the wagon help to that subtlety. The engine was detailed from a plastic kit a detailed locomotive in a bygone era.

The maintenance truck in the foreground was fabricated using a 1:24-scale model and parts from a railway inspection car. The tracks in the background was weathered using rust-colored paint to the tracks in and around the vehicle.

The photo was shot with a Canon EOS 7D Mark II DSLR digital camera, 1/15 image mode, and a 17-55mm lens. ED

Ron's Books